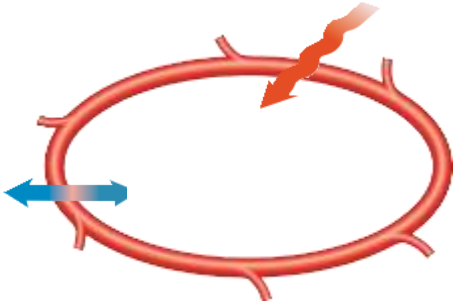
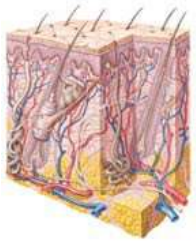
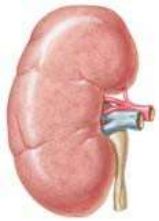
physiology

Physiology *is the study of how the systems of the body work. i.e. study the function of our bodies in order to maintain a constant internal environment which is called homeostasis.*

Buffering the External Environment In multicellular organisms, the basic homeostatic mechanisms of single-celled organisms are mirrored by integration of specialized organ systems to create a stable environment for the cells. This allows specialization of cellular functions and a layer of protection for the systems







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Sciences closely related with physiology:

1.Anatomy : which is study the structure of our bodies.

2. Medicine :is the application of physiologic principle which gives us insight into the development of disease.

Claude Bernard (1865) the founder of physiology. **Said if you want to be good a doctor you must be good physiologist.**

Physiology include:

a.Body organization : the anatomical orientation tell us that our bodies are comprised of many little cells.

b. cells: are the smallest self contained functional unit of the tissue.

Tissues: are similar in structure , function and embryonic origin are grouped together.

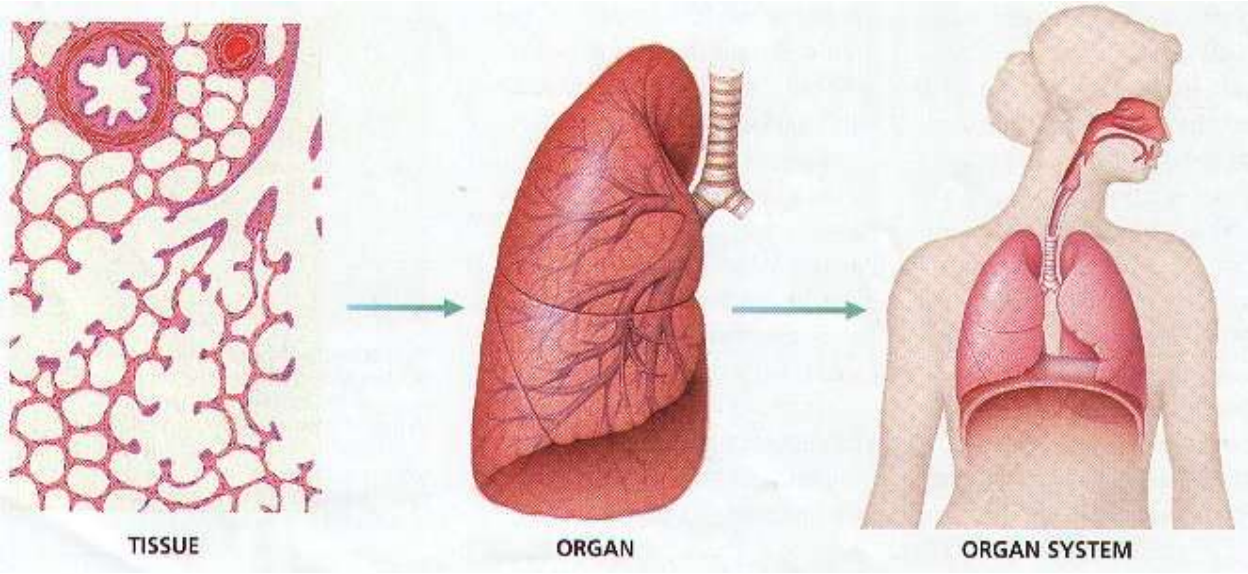
e.g epithelial cells: are specialized for protection , secretion, excretion and absorption.

Connective cell: are specialized for supportive of body structure.

c. organs: specific groups of tissues form organ.

d. systems: specific groups of organs that work together to produce certain function.

e.g


TISSUE
ORGAN
ORGAN SYSTEM

Our bodies are mostly water:70%

-the liquid inside our cell is known intracellular fluid.50%

-the liquid outside our cell is known interstitial fluid.15%

-the fluid which circulate to supply food ,nutrient and remove waste product is called plasma5%

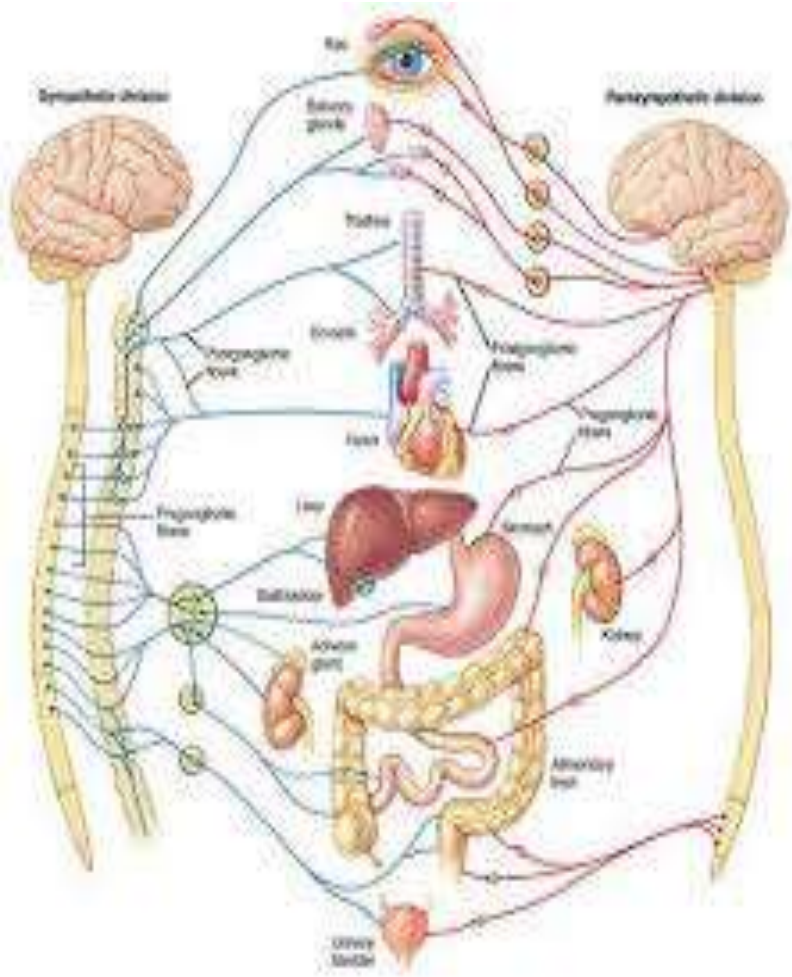
The interstitial fluid +plasma= extracellular fluid which is called internal environment .

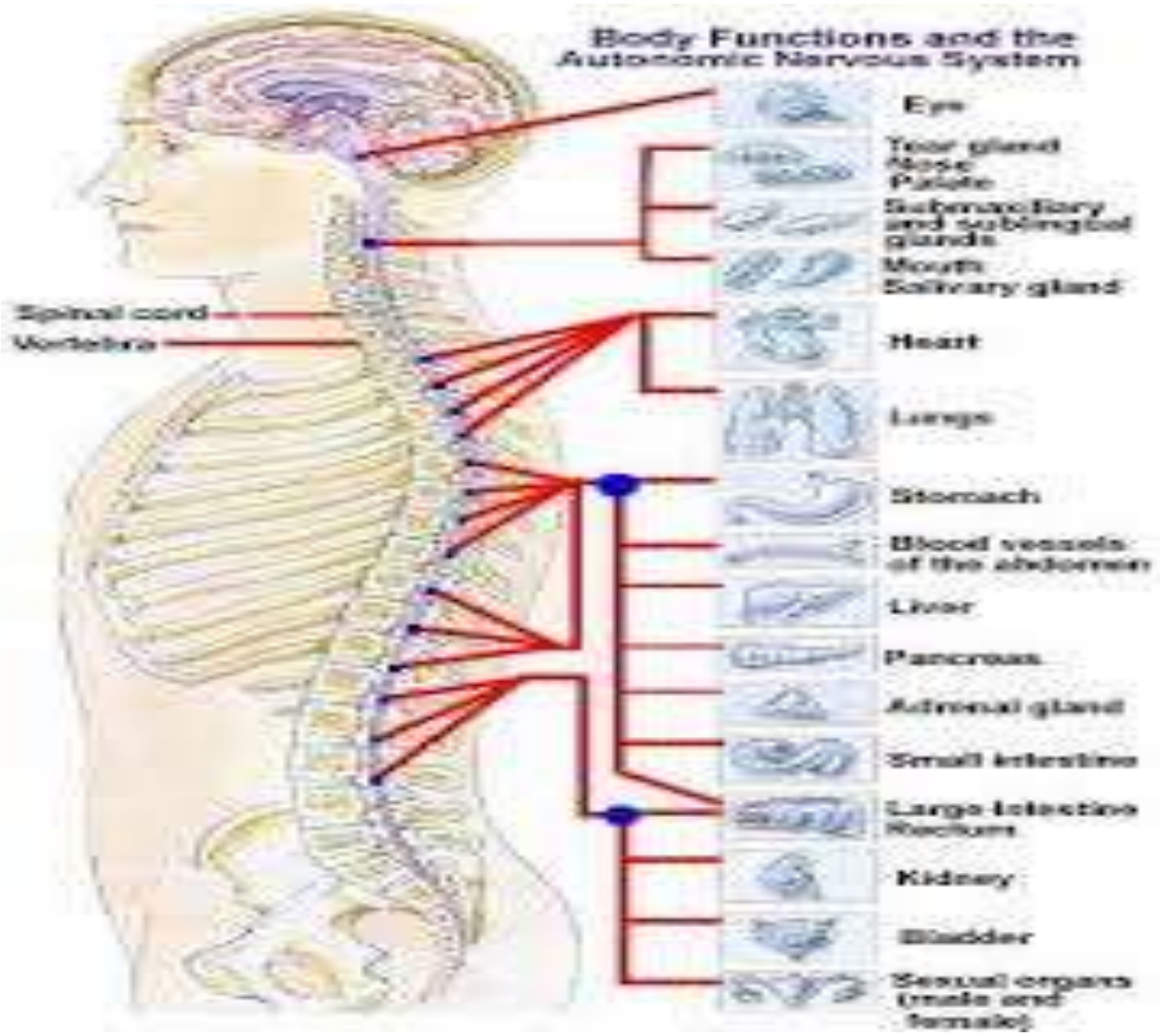
All body systems work to produce constant internal environment (homeostasis).

Body Systems

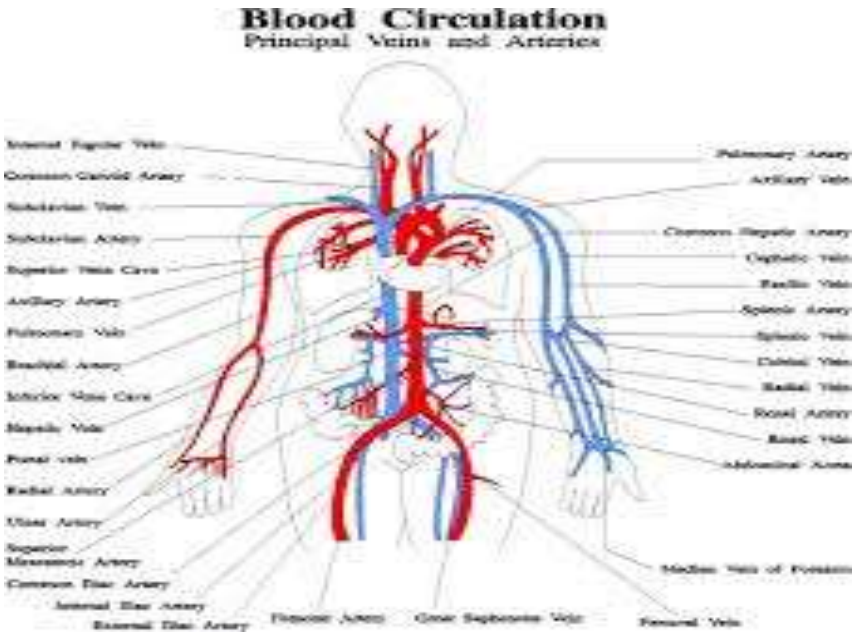
- Body systems are organ systems within the body that work together to help the organism grow, develop, and maintain homeostasis.
- They include:
  - Integumentary system
  - Digestive system
  - Nervous system
  - Reproductive system
  - Muscular system
  - Skeletal system
  - Renal system
  - Respiratory System
  - Circulatory system

1.autonomic nervous system:
divided into sympathetic and parasympathetic nervous system which they control involuntary movement of viscera.

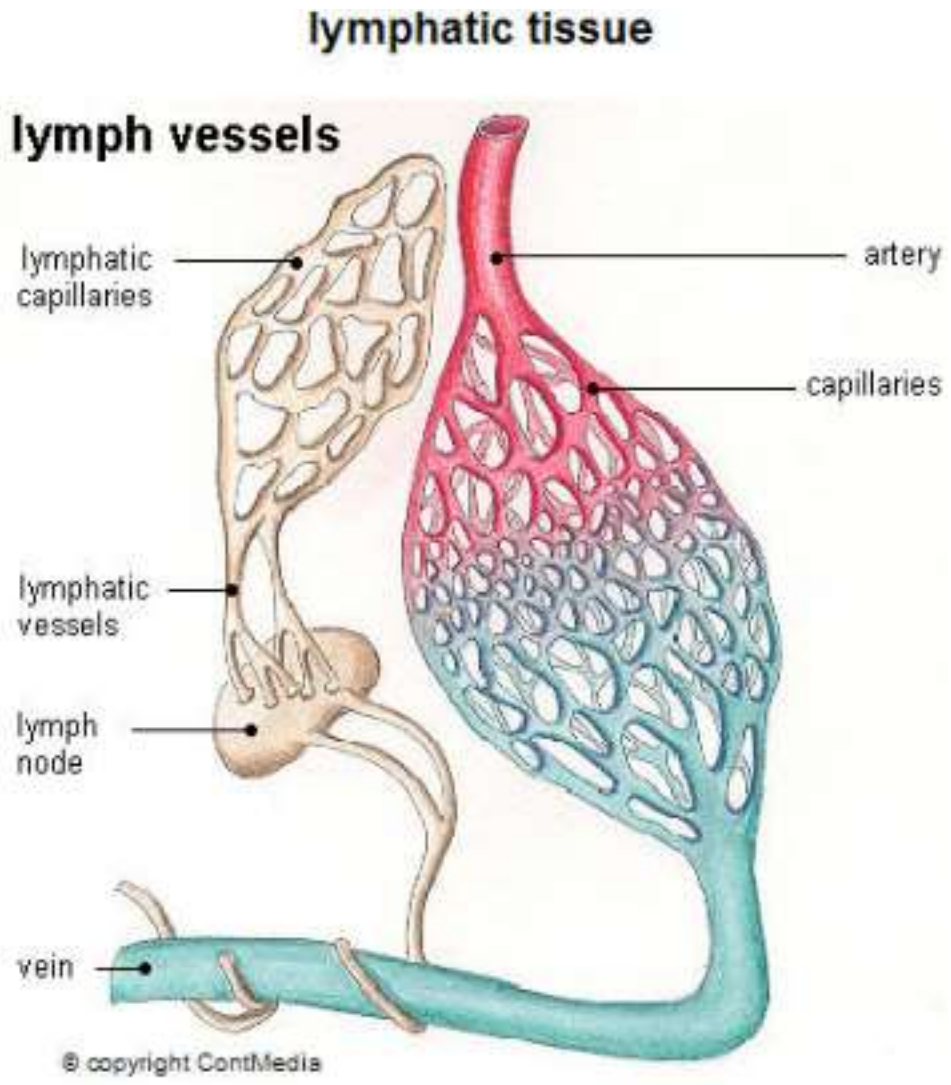



Body Functions and the Autonomic Nervous System
Eye
Tear gland
Nose
Palate
Submaxillary and sublingual glands
Mouth
Salivary gland
Heart
Lungs
Stomach
Blood vessels of the abdomen
Liver
Pancreas
Adrenal gland
Small intestine
Large intestine
Rectum
Kidney
Bladder
Sexual organs (male and female)
Spinal cord
Vertebra

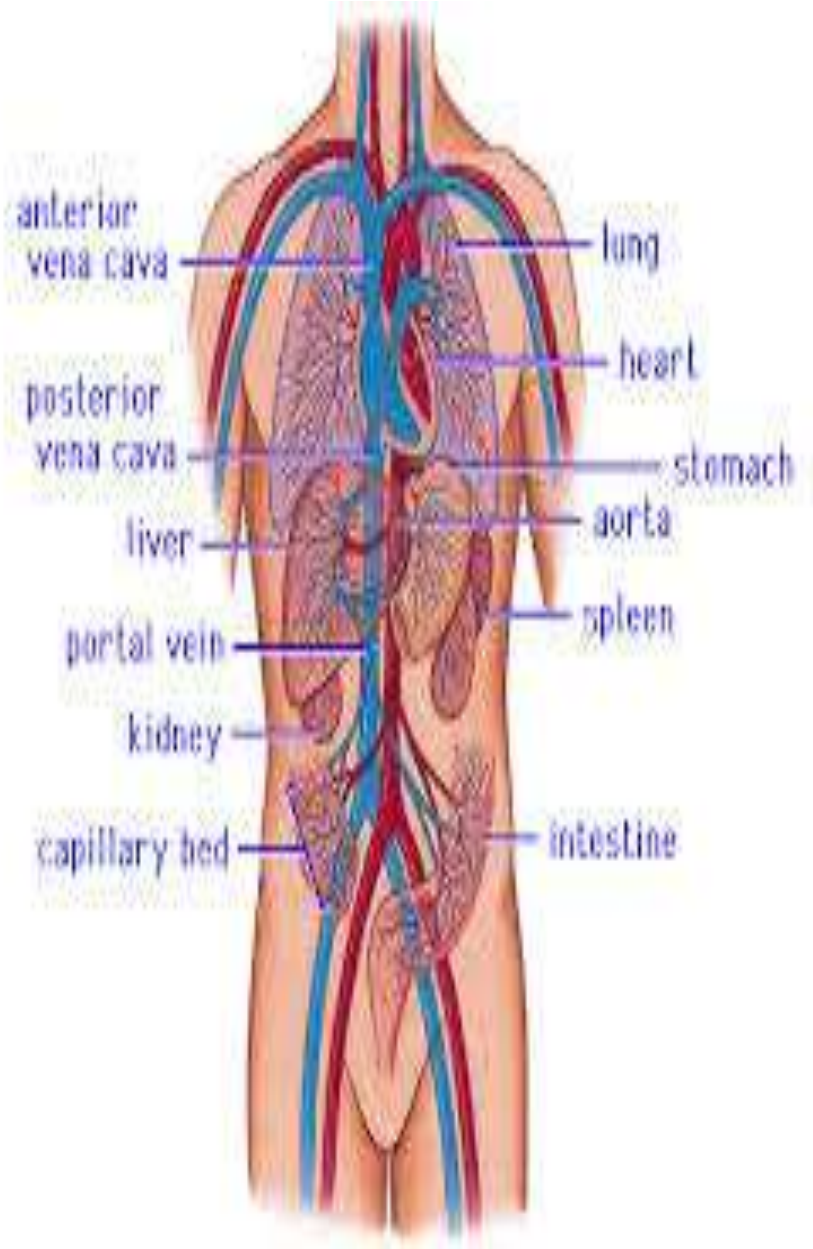
2.circulatory body fluid which include: blood, lymph and cerebrospinal fluid.
This is the system that our blood flows through. It carries nutrients and oxygen to all the organs of the body, and carries away wastes.



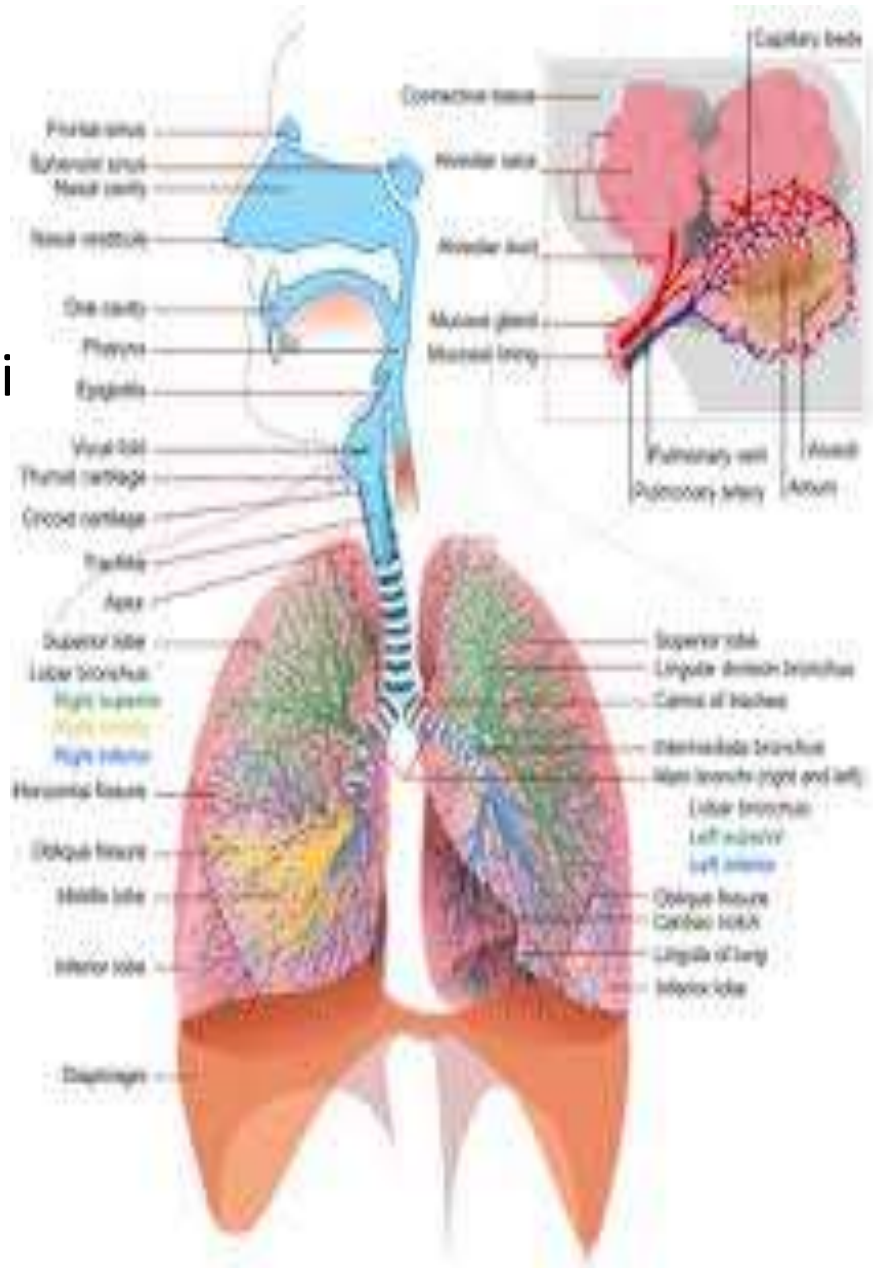
lymph flows over the tissues and carries off harmful bacteria, which is filtered out in the lymph nodes. White blood cells, which are produced



3.cardiovascular system: movement of blood through vascular tree, transport O2 from lungs to the cell and CO2 from cell to lungs , transport of nutrient to tissues and waste from cell.



4.Respiratory. The respiratory system provides the body with oxygen, and it expels carbon dioxide from the body. The nasal passage, trachea,
bronchial tubes, lungs, and alveoli are involved in this process. Inhaled oxygen is broken down in the alveoli (tiny air sacs in the lungs) and
then passed into the capillaries, where it travels into the bloodstream. In the same way, carbon dioxide from the blood is passed back into the
alveoli, and exhaled from the body.



5.Digestive. This is the system that breaks down food and absorbs its nutrients. The digestive tract is a long system of tubes that run from the mouth to the anus. It includes the esophagus, stomach, small intestine, and large intestine. The liver and the pancreas manufacture special enzymes to help break down food.