The Human Body

AusDBF - eLearning Modules

Please scroll through each of the pages in this presentation

Our Mission: To connect people with dragon boating across Australia

The Human Body

Welcome to AusDBF eLearning module

– The Human Body.

This is the first in a series of eLearning modules relating to The Human Body Systems.

This presentation contains texts, graphics, videos and an online survey questionnaire.

It is important that you read all the text and instructions before you proceed to the next page or option.

Any queries please contact development@ausdbf.com.au

The Human Body – An Introduction

The study of the human body commonly involves anatomy, physiology, histology and embryology.

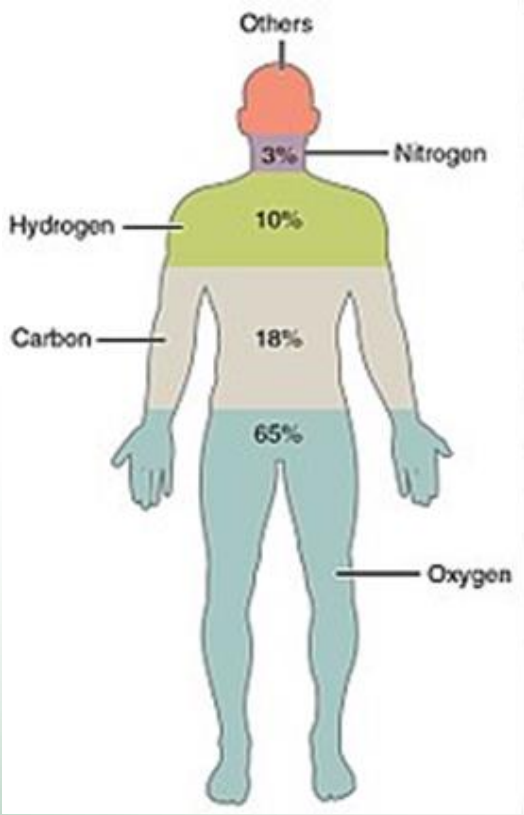
- ✓ Anatomy - focuses on the structure of the body
- ✓ Physiology - focuses on the systems of the body, and how they function.
- ✓ Histology – focuses on the microscopic structures of tissues & cells of the body
- ✓ Embryology – focuses on the study of the embryos and their development

The human body is composed of many different types of cells that together create tissues and subsequently organ & systems.

Many systems and mechanisms interact in order to maintain homeostasis.

They ensure homeostasis and the viability of the human body.

Elements found in the human body, by mass.
Trace elements are less than 1% combined (and each less than 0.1%).



Element	Symbol	Percentage in Body
Oxygen	O	65.0
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Sodium	Na	0.2
Chlorine	Cl	0.2
Magnesium	Mg	0.1
Trace elements include boron (B), chromium (Cr), cobalt (Co), copper (Cu), fluorine (F), iodine (I), iron (Fe), manganese (Mn), molybdenum (Mo), selenium (Se), silicon (Si), tin (Sn), vanadium (V), and zinc (Zn).		less than 1.0

Composition of the Human Body

- The human body contains nearly 100 trillion cells
- The human brain contains more than 100 billion nerve cells.
- The mass of the human body is composed of eleven elements, all of which are necessary for life.
- 99% of the body is made up of 6 elements - hydrogen, oxygen, carbon, nitrogen, calcium and phosphorus.
- Other important elements found in the body are - potassium, sodium, sulphur, chlorine and magnesium.
- Water makes up more than 50% of the average adult's body weight.
- The content, acidity and composition of the water inside and outside cells is carefully maintained.
- The main electrolytes in body water outside cells are sodium and chloride, whereas within cells it is potassium and other phosphates.

Cells

CELLS

- are the basic building block of all living things
- all have their own specialised function
- provide structure for the body
- are able to take in nutrients from food fuels to enable them to carry out important functions

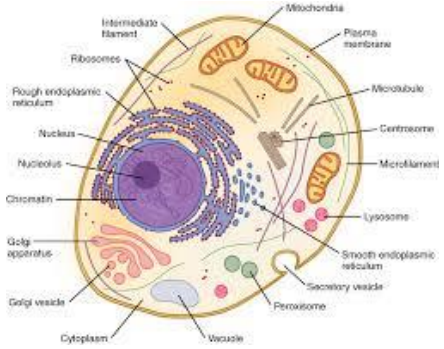
The body also hosts about the same number of non-human cells, and multicellular organisms, eg. bacteria, which reside in the gastrointestinal tract and on the skin.

Not all parts of the body are made from cells.

- cells sit in an extracellular matrix that consists of proteins such as collagen, surrounded by extracellular fluids.
- of the 70 kg weight of an average human body, nearly 25 kg is non-human cells or non-cellular material such as bone and connective tissue.

Cells

The human body is composed of over a trillion of cells.



MAIN STRUCTURES OF A CELL INCLUDE -

CELL MEMBRANE *(also known as plasma membrane)*

- surrounds all cells
- is a thin flexible barrier that separates the cell's internal and external environments
- is selectively permeable

CYTOPLASM

- lies inside the cell the cell membrane and the nucleus
- is where most functions of the cell occur
- includes other "organelles" which all have important functions (see next slide)

NUCLEUS

- is the controlling centre of the cell
- is where the DNA (genes - genetic material) is found
- both nucleoli and chromatin are also found in the nucleus

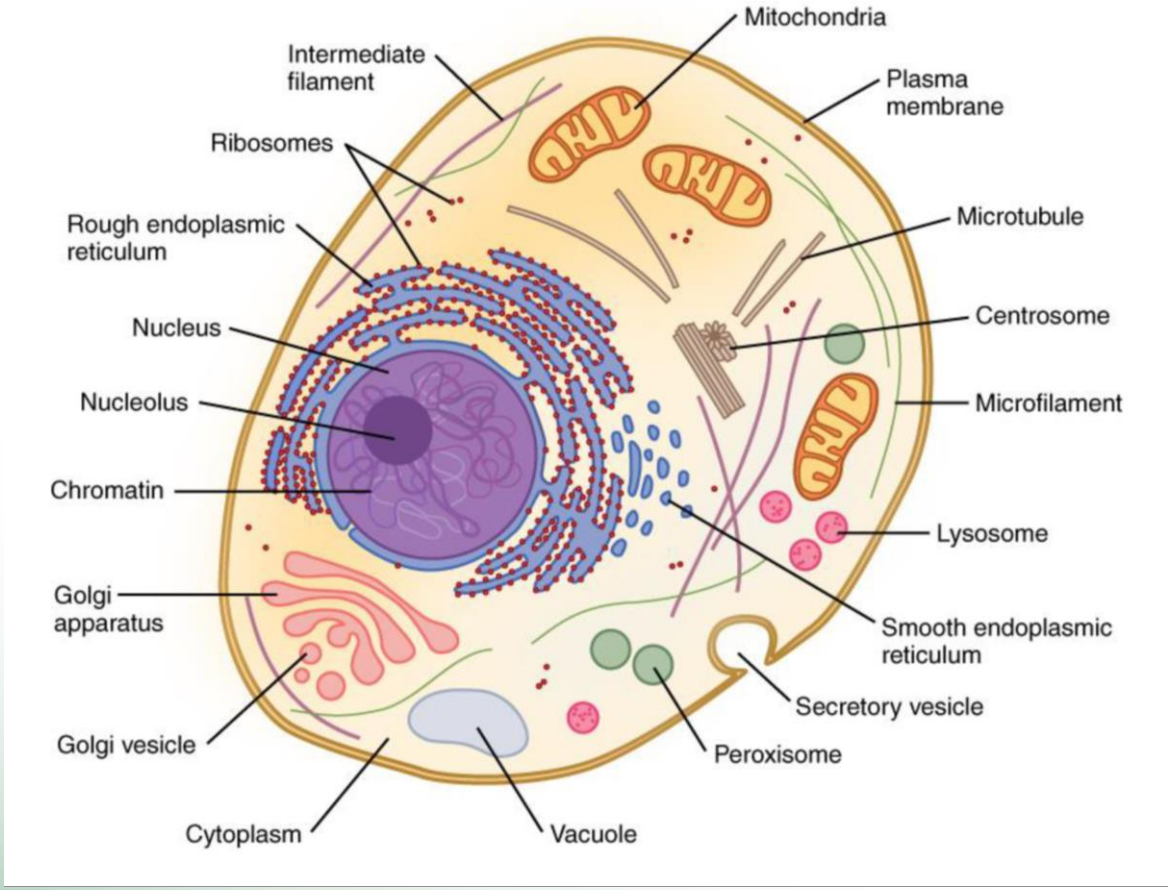
OTHER STRUCTURES FOUND IN CELLS

OTHER STRUCTURES ALSO FOUND IN CELLS, WITHIN THE CYTOPLASM

- Mitochondria
  - ✓ the “powerhouse” of the cell
  - ✓ important in cell respiration and energy production

- golgi apparatus & vesicle
- vacuoles
- microfilaments
- ribosomes
- endoplasmic reticulum

Structure of a Cell



Our Mission: To connect people with dragon boating across Australia

Tissue

A group of cells found together, with a specialised function form tissues. The body consists of four main types of tissues.

EPITHELIAL TISSUE

- sheets of cells that cover exterior surfaces of the body and lines internal cavities and passageways and forms certain glands

CONNECTIVE TISSUE

- binds the cells and organs of the body together, main functions are in protection, support, and the integration of all parts of the body

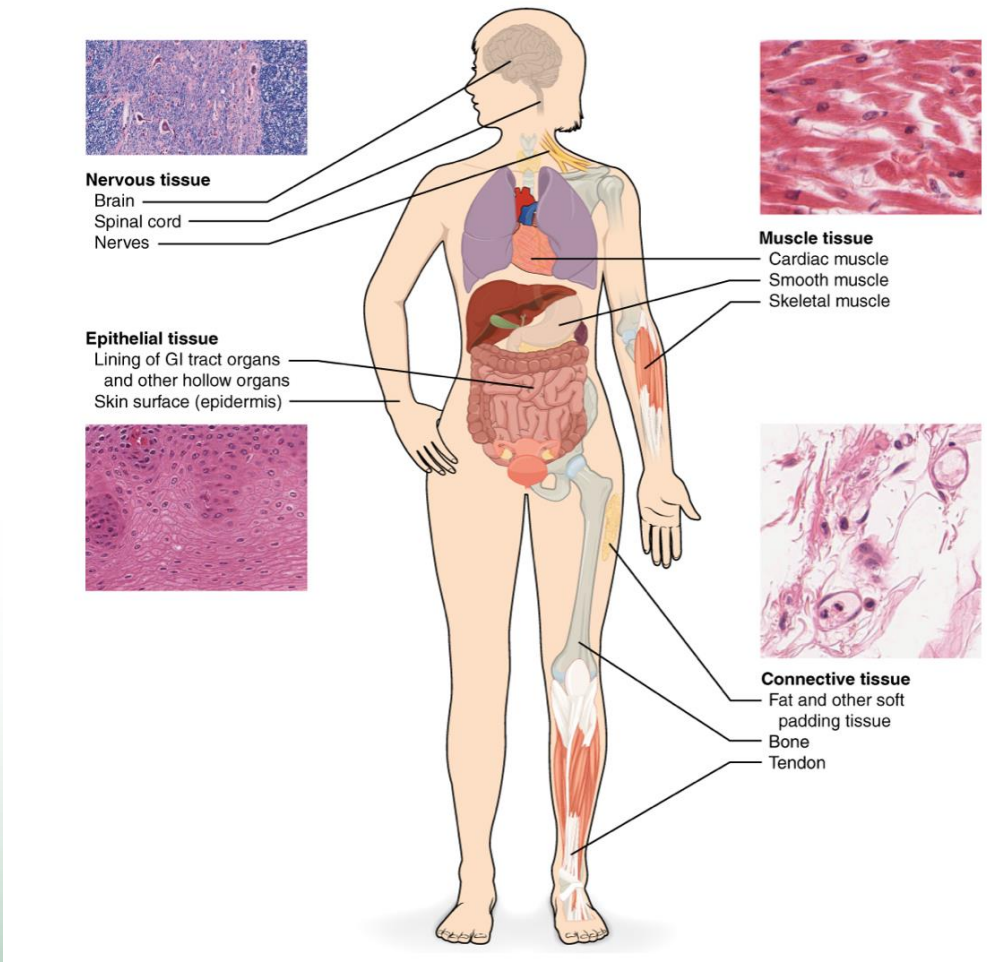
NERVOUS TISSUE

- is excitable and. Enables the electrochemical signals (nerve impulses) to communicate between different areas of the body

MUSCLE TISSUE

- responds to stimulation, contracting and relaxing
- there are three types of muscle tissue – skeletal, cardiac and smooth

The four types of Tissue



Our Mission: To connect people with dragon boating across Australia

ORGANS

- are a structured collections of cells (and tissues) with a specific function
- work together within the various systems of the human body
- mostly sit within the body's cavities, with the exception of skin.

EXAMPLES OF ORGANS INCLUDE …..

- heart,
- lungs,
- liver,
- stomach,
- large & small intestines,
- kidneys,
- pancreas,
- gall bladder etc.