**Basic 1 Organs**

An **organ** is a part of an organism carrying out one or more functions. A **torso** is a part of the human body but without the legs and arms and with or without the head. The **diaphragm** separates the trunk into two parts:

* The **thoracic cavity** – The windpipe, the gullet, the lungs and the heart are situated in the thoracic cavity.
* The **abdominal cavity** – The gullet, the stomach, the liver, the intestines and the kidneys are situated in the abdominal cavity.

When organs work together to do a certain job we say that they belong to an **organ system**. This are the different organ systems.

* **Digestive system** – Gullet, liver, stomach, small & large intestines.
* **Skeletal system** – Rib, backbone, thigh bone.
* **Muscular system** – Biceps, abdominal muscle, thigh muscle.
* **Circulator system** – Heart, main artery, main vain.
* **Respiratory system** – Windpipe, bronchus, lung.
* **Nervous system** – Brain, spinal cord, nerve.

**Basic 2 Cells**

Plants and animals are made up of small parts: **cells**. These are tiny building blocks. You can’t see them with the naked eye so you need a microscope. When you look at the cells through a microscope the cells seem to be flat, but in reality they are a kind of boxes because something is in it. There are different types of cells. Each cell type looks different because it has its own job to do. Some cells grow and change shape to do a particular job, so they become specialized. Cells that do the same job group together to form **tissues**. A tissue is a group of cells having the same shape and carrying out the same function. A few examples of tissues:

* Muscle cells – They are long and thin. They are very good at pulling.
* Epithelial cells – They cover and protect the organs. But only if they form a sheet so they can cover the whole surface.
* Red & white blood cells – They can carry oxygen and kill germs. This tissue is called blood.
* Never cells – They are specialized and form a tissue which can carry messages around the body.

In some tissues extracellular material is found between the cells. **Extracellular material** is the part that tissues separate from each other. The cells are alive but the extracellular material not. It can be very hard or very soft and flexible. It depends on what job it has to do.

**Basic 3 The microscope**

You need a **microscope** to see cells. A microscope makes things look larger by using lenses. These lenses magnify what you are looking at: the **specimen**. These are parts of the microscope:

* **Arm** – It is used for carrying the microscope.
* **Eyepiece lens** – You place your eye on it. Some microscopes have two eyepiece lenses, one which magnifies 5x and one which magnifies 10x.
* **Tube** – This part supports the eyepiece lens and directs the light up to your eye.
* **Revolving nosepiece** – It is found below the tube. This rotating part holds three other lenses: the **objective lenses**.
1. 4x objective lens
2. 10x objective lens
3. 40x objective lens
* **Stage** – The specimen is placed onto the stage.
* **Stage clips** – They hold the specimen tight onto the stage.
* **Coarse & fine focus** – With the these things you can move the stage up and down.
* **Light source** – It shines on the stage.
* **Diaphragm** – With the diaphragm you can allow different amounts of light onto the stage.

**Basic 4 Working with the microscope**

You can calculate the total magnification of the specimen with this calculation:

**Total magnification = eyepiece lens magnification x objective lens magnification**.

**Basic 5 Plant cells**

All plant cells have the following parts:

* **Cytoplasm** - is a jelly-like fluid containing lots of chemicals. It fills the cell.
* **Cell membrane** - is a thin flexible layer around the cell.
* **Nucleus** – This controls what happens in the cell. It contains plasma.
* **Nuclear membrane** – It surrounds the nucleus.
* **Cell wall** – It surrounds the cell. It is strong and rigid (stijf) wall.
* **Cellulose** – The cellwall is made of it. It helps to give support to the cell.
* **Vacuole** – It is like a sack in the middle of the cell that contains fluid. This fluid is called cell sap and may contain water, salts and sugar.
* **Intercellular spaces** – Are the spaces filled with air between the different plant cells.

The cyptoplasm contains different kinds of grain called **plastids**. These are the 3 types:

* **Chloroplasts** - Are all the green parts of the plant. They are able to absorb light energy which is needed during photosynthesis.
* **Chromoplasts** – They give fruits and flowers red, orange and yellow colors.
* **Leucoplasts** – They are colorless plastids that storage starch (zetmeel). They are found in roots and tubers (knollen) like potatoes.

**Basic 6 Animal cells**

All animal cells have the following parts:

* **Cell membrane** – It surrounds the cell.
* **Nucleus** – It controls what happens in the cell.
* **Nuclear membrane** – It surrounds the nucleus.
* **Cytoplasm** – It contains the nucleus surrounded by the nuclear membrane. It is a jelly-like fluid.

**Basic 7 Stomata**

Plants take up carbon dioxide through **stomata.**  That are tiny holes, mostly found on the lower side of a leaf. They can close and go open to take water and carbon dioxide.