

## Cells and Classification

- Living things (called organisms) move, respire, are sensitive, grow, reproduce, excrete and need nutrition. MRS GREN

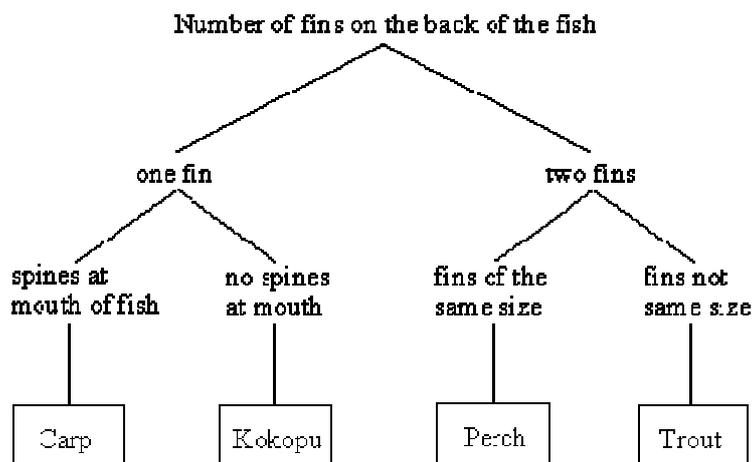
Most of this is common sense. **Movement:** You can move around from place to place and so can most animals. A few animals like barnacles can only do this when they are young larvae. Adult barnacles are firmly stuck onto the rock, but they can still move their legs to catch food. Animals move to: find shelter, escape from predators and other danger, find food, find a mate. **Respiration** is the release of energy from glucose or another organic chemical in our cells. Respiration happens in ALL living things. **Sensitivity** is very important. How would you know if something was fit to eat if you could not smell or taste it? How would you escape danger? **Growth:** we all do it. **Reproduction:** this continues the species. **Excretion** means getting rid of the poisonous waste products from the chemical reactions in our bodies. We breathe out carbon dioxide and we urinate. **Nutrition:** We have to eat to provide the materials for growth, repair and to provide us with energy. Plants make their food by photosynthesis.

- Classification is a process of sorting objects which have similar characteristics.  
One way to do this is by using a key.

### **BEANS IN THE KITCHEN**

1	Bean round Bean oval or oblong	<b>Garbanzo bean</b> Go to 2
2	Bean white Bean has dark pigments	<b>White northern</b> Go to 3
3	Bean evenly pigmented Bean pigmentation mottled	Go to 4 <b>Pinto bean</b>
4	Bean black Bean reddish-brown	<b>Black bean</b> <b>Kidney bean</b>

### **NEW ZEALAND FRESHWATER FISH**



- Living things can be classified into groups by observing their structural and functional characteristics. Most biologist classify organisms into Kingdoms = animal, plants, microbes
- Animals can be classified into two main groups: vertebrates which have bones (mammals, birds, fish, amphibians & reptiles) and invertebrates which do not.

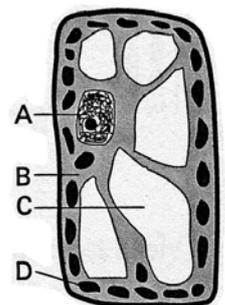
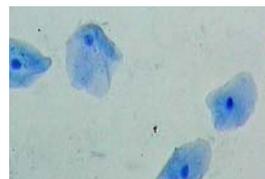
Mammals	Birds	Reptiles	Fish	Amphibians
Have fur/hair. Young are born live. Young are fed milk. Have teeth. Are warm blooded.	Have a beak. Have feathers. Have wings / can fly. Lay eggs. Have two legs (are bipedal). Are warm blooded.	Have horny or scaly skin. Lay eggs. Are cold blooded.	Fins. Gills / can breathe under water. Scales. Lay eggs	Can breathe through their skin. Live on both land and in water. Can have two stages (larval and adult)

Examples of invertebrates: worm, snail, weta, spider

- Green plants make their own food by the process of photosynthesis. Animals rely on other organisms for food

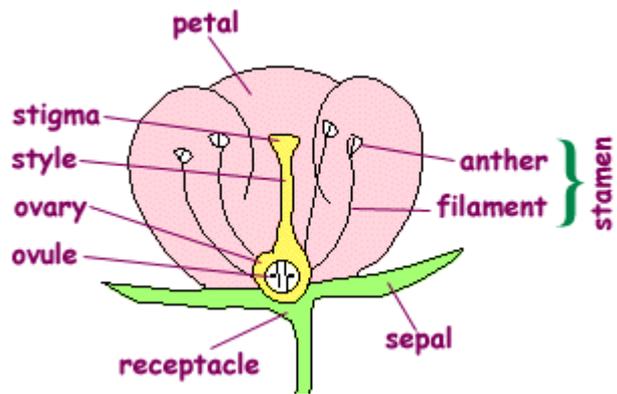
To make glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) by the process of photosynthesis, plants need water and carbon dioxide in addition to sunlight. Food is made by leaves which contain a green pigment called chlorophyll, in their chloroplasts. Plants release oxygen from their leaves during photosynthesis.

- All organisms are made of cells. There are many different types of cells, with different shapes and different functions. All cells contain a nucleus, cell membrane, cytoplasm and organelles. Plant cells also contain a cell wall and large vacuoles.



ORGANELLE	LOCATION	DESCRIPTION	FUNCTION
cell wall	plant, not animal	outer layer rigid, strong, stiff made of cellulose	support (grow tall) protection
cell membrane	both plant/animal	plant - inside cell wall animal - outer layer selectively permeable	support protection controls movement of materials in/out of cell barrier between cell and its environment
nucleus	both plant/animal	large, oval	controls cell activities
cytoplasm	both plant/animal	clear, thick, jellylike material	supports /protects cell contents
vacuole	plant - few/large animal - small	fluid-filled sacs	store food, water, waste (plants need to store large amounts of food)
chloroplast	plant, not animal	green, oval usually containing chlorophyll (green pigment)	uses energy from sun to make food for the plant (photosynthesis)

- ❑ A flowering plant's life cycle includes the formation of flowers, pollination- the transfer of pollen grains, containing sperm cells, from the ripe anther to the stigma (by insects or by wind), fertilisation and the growing of seeds.

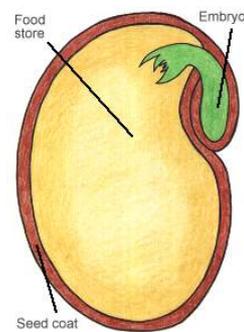


- ❑ Seeds are dispersed in many ways, by animals, water and wind.



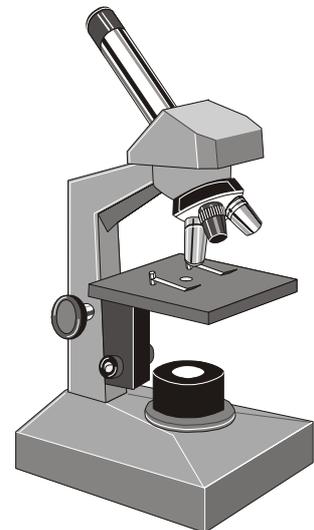
- ❑ A seed develops from a fertilised ovule. The seed contains the plant embryo.

Germination occurs when the seed starts to grow roots and a stem. Germination needs water, oxygen and warmth to occur



- ❑ Parts of the microscope and what they do:

eye piece – you look through it – magnifies  
 barrel – tube you look down  
 low, medium and high power lenses – different magnifications  
 revolving nose piece – to change the lenses  
 stage – put sample on here  
 base & arm – carry microscope by these  
 coarse focus knob – to bring object into focus  
 fine focus knob – fine adjustment of focus  
 clips – hold slide in place  
 lamp – shines light through specimen on slide on stage



- ❑ How To Make A Wet Mount:

Gather a **thin** slice/piece of whatever your specimen is. If your too thick, then the cover slip will wobble on top of the sample like a specimen is see-saw. The sample also needs to be this so light will be able to pass through it. Also several layers of cells on top of each other would look very confusing.

Place **ONE** drop of water or ONE drop of stain **directly over** the specimen. Place the cover slip at a 45 degree angle (approximately), with one edge touching the water drop, and **lower it** gently.

