

Human organ systems

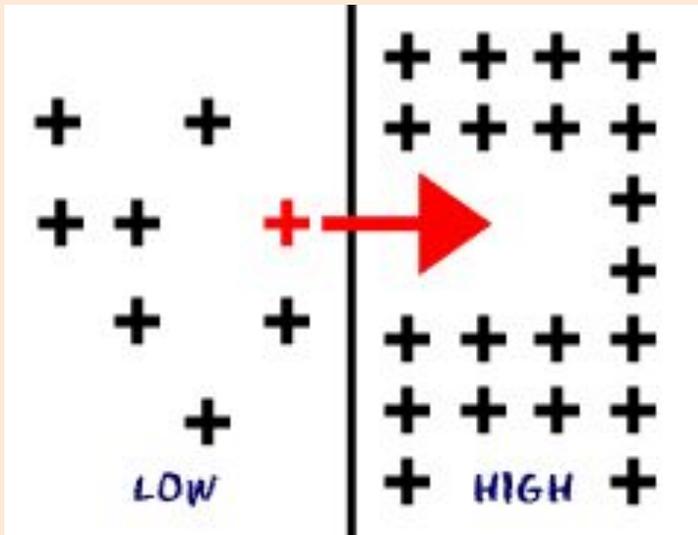
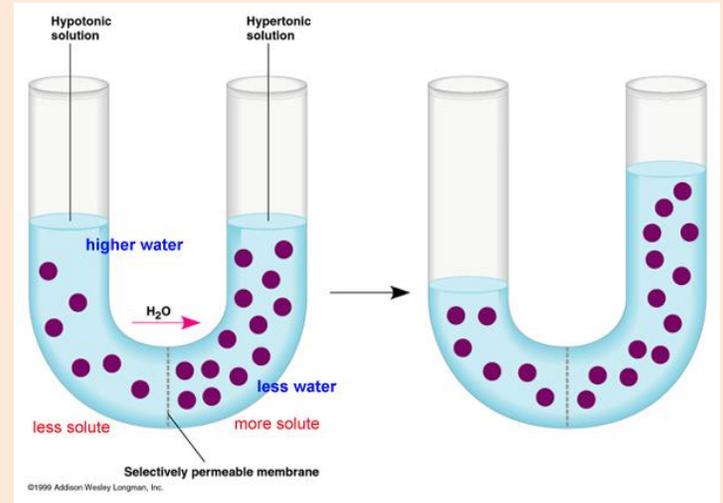
- Can you label the names of the main organ systems of the human body on the handout?
- Can you explain what each one does?
- Do you know the names of the individual organs of each organ system and their specific functions?

Parts of a cell

- Can you identify the function of all of the parts of a cell listed below?
- Can you label the diagram of plant and animal cells properly?
- Can you list the features that make plant and animal cells different?

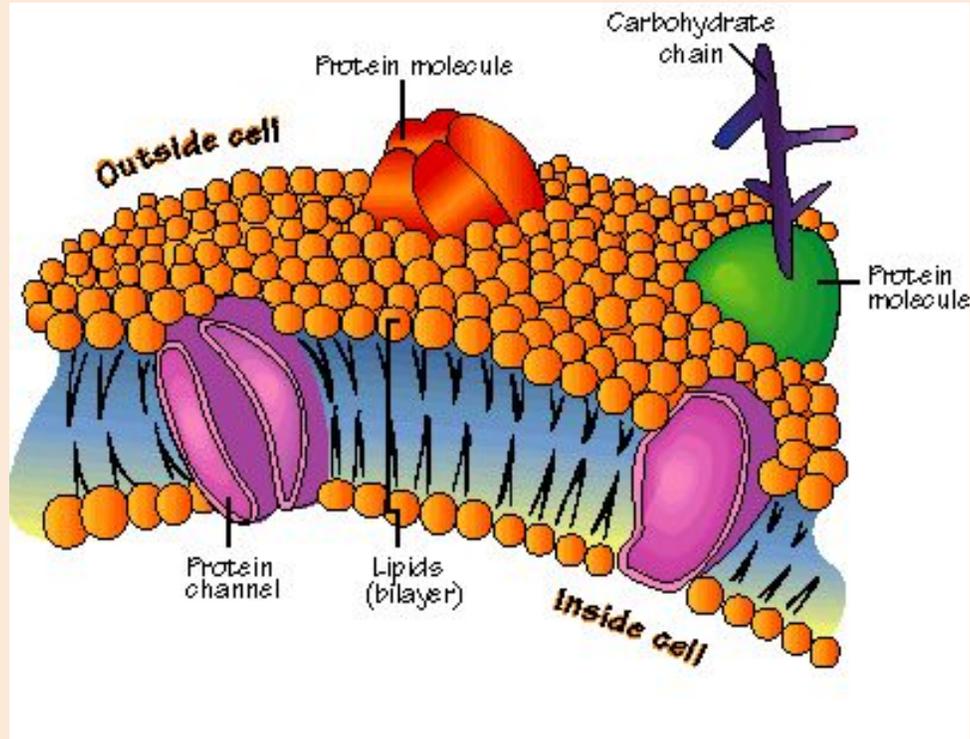
vacuole, cell wall, cell membrane, nucleus, mitochondria, smooth endoplasmic reticulum, golgi apparatus, lysosome, chloroplast, rough endoplasmic reticulum, ribosome, cytoplasm, chromosome

Diffusion, active transport, osmosis



- Which one is which? (Think about high to low or low to high.)
- Which one requires an energy input?

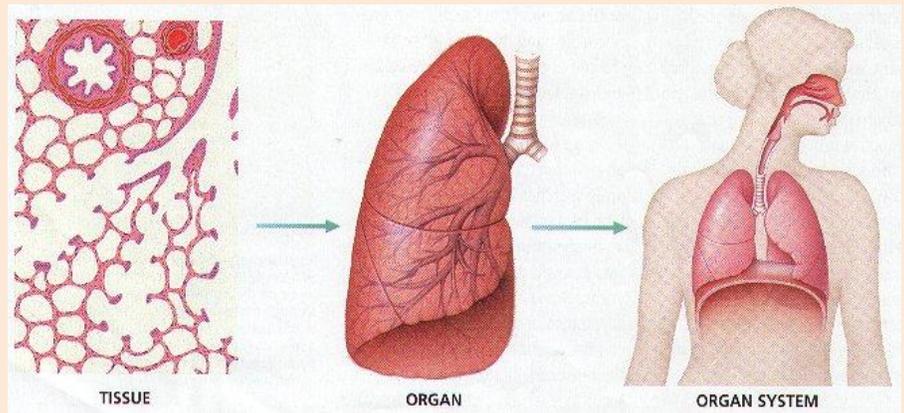
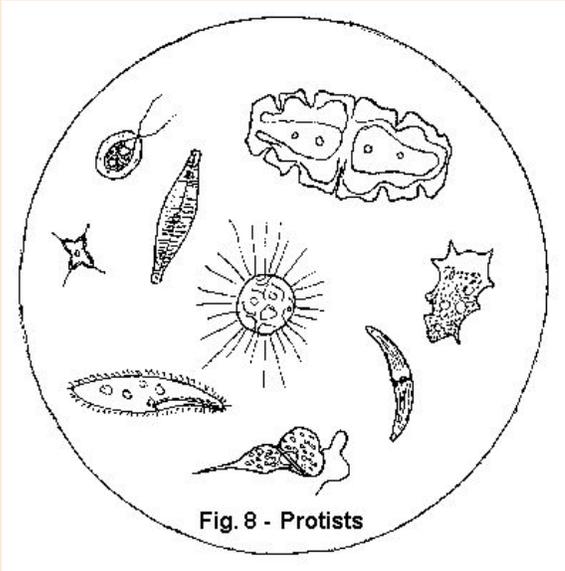
Cell membrane



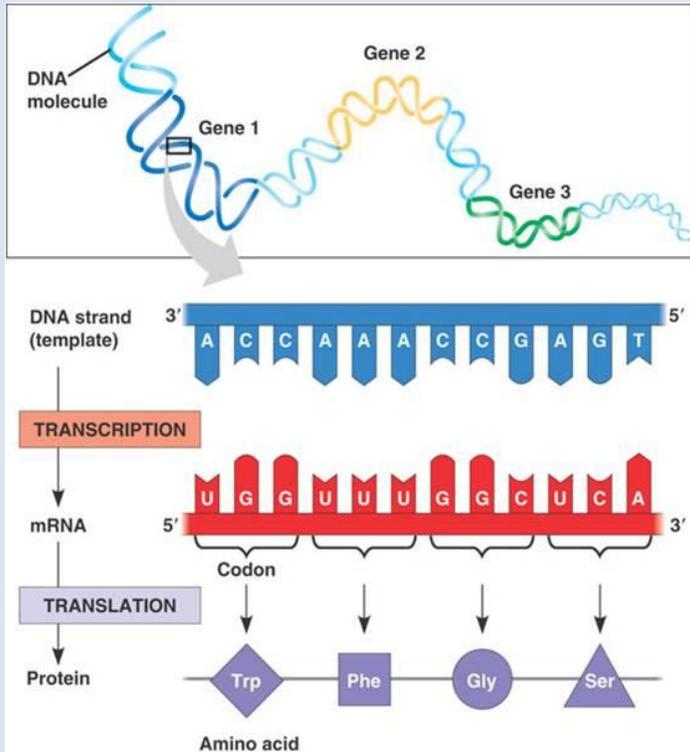
What are the 3 jobs of the cell membrane?

Unicellular / multicellular

What are the advantages and disadvantages of each?



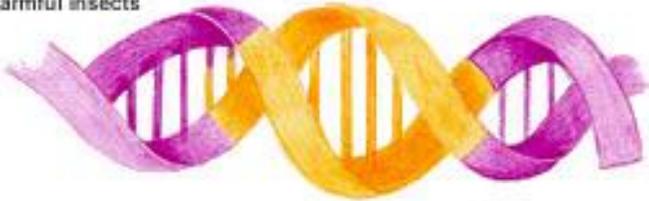
Protein synthesis



- What are proteins made out of?
- Where does this process take place?
- How does DNA control this process?
- How does it determine what traits you express?

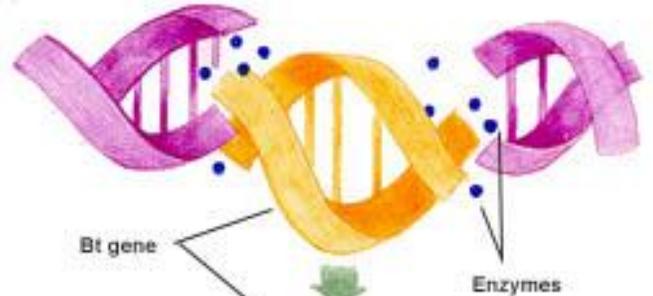
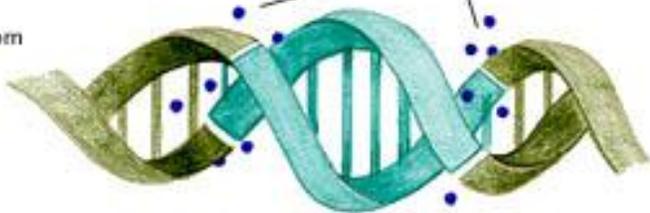
Genetic engineering

Bt gene will help corn resist harmful insects



Enzymes are used to move genes

Corn



Bt gene

Enzymes

Corn

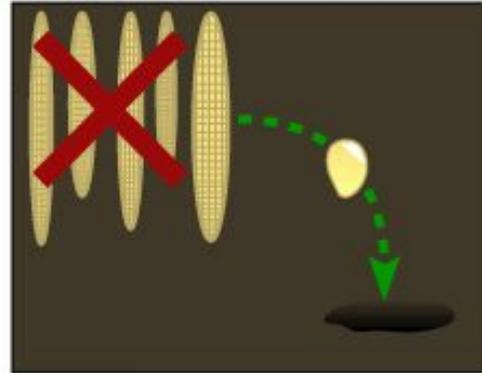
Bt gene inserted into corn



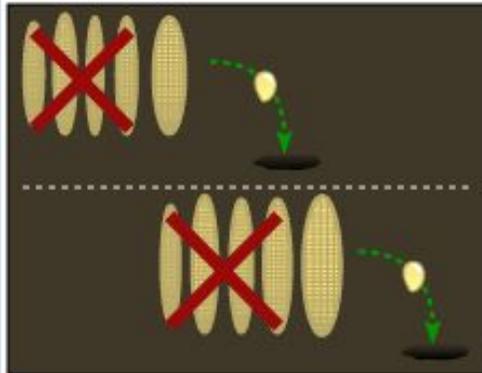
Selective breeding



1. Natural variation occurs in the wild population.



2. Seeds for the next generation are chosen only from individuals with the most desirable traits.



3. Repeat this process for several generations.

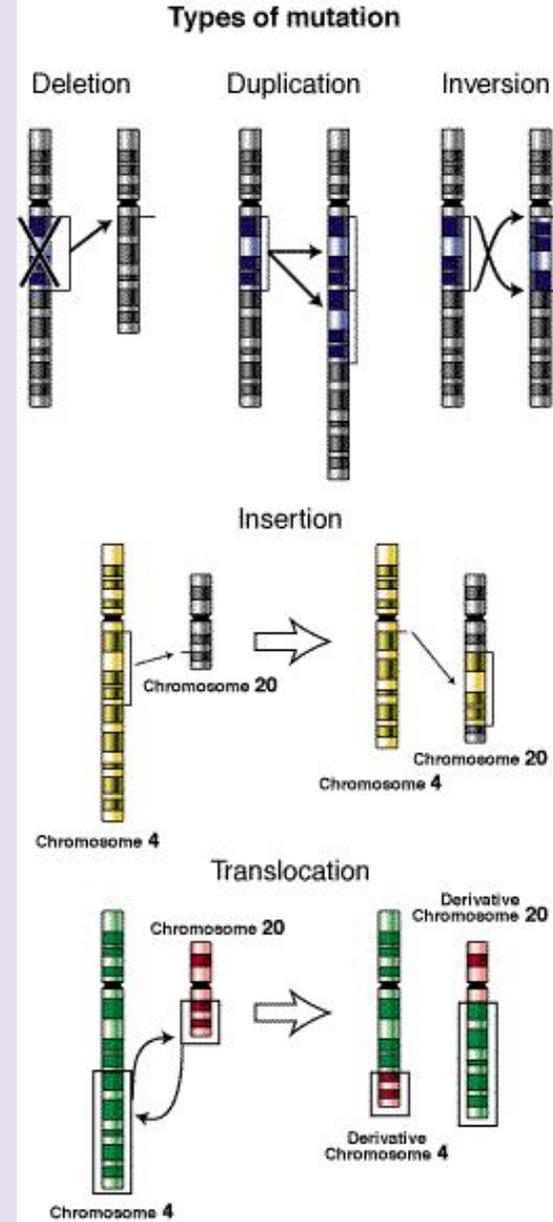


4. Over time, the quality of the crop increases.

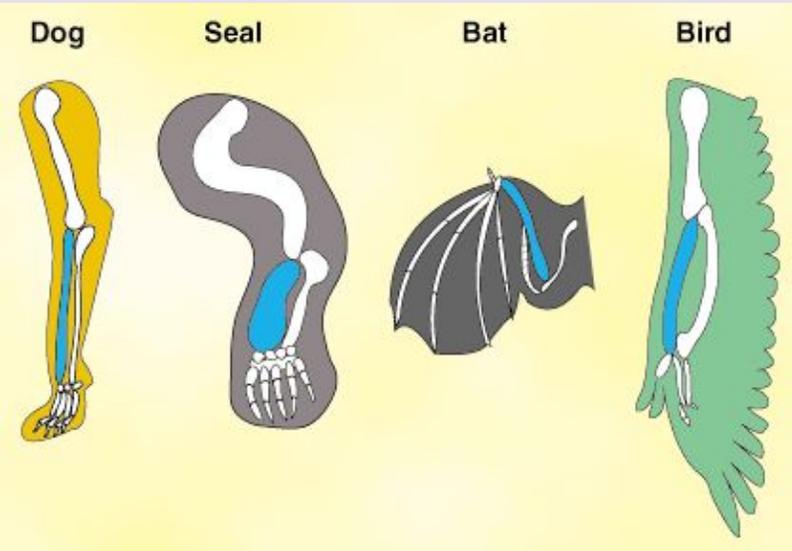
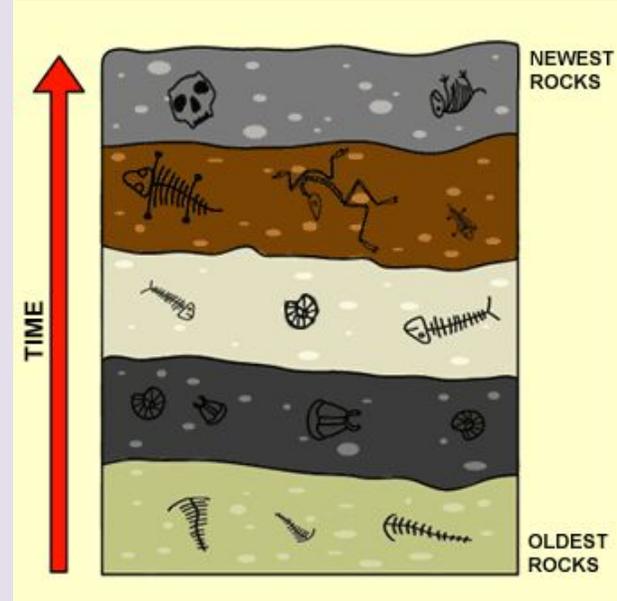
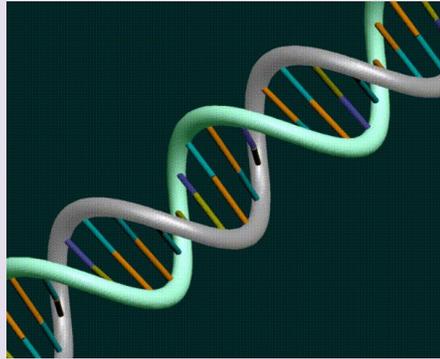
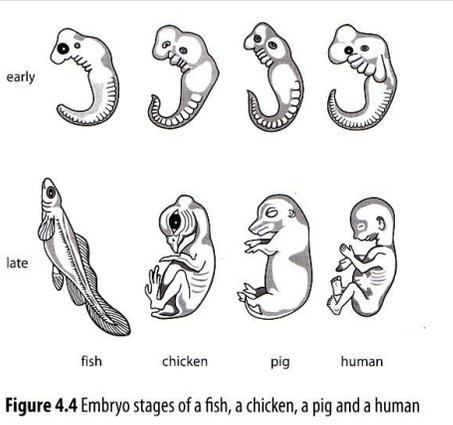
Mutation

- What is a substitution?
- What is a deletion?
- What is an insertion?

- How do mutations affect how a gene is read?



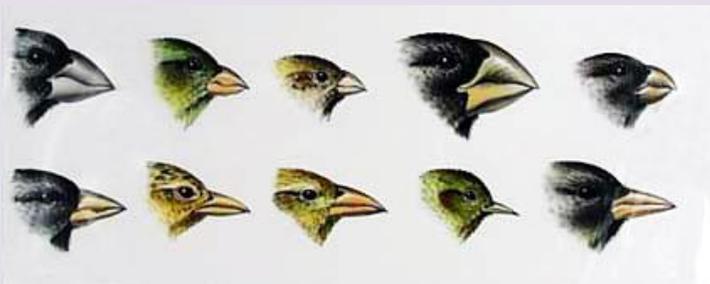
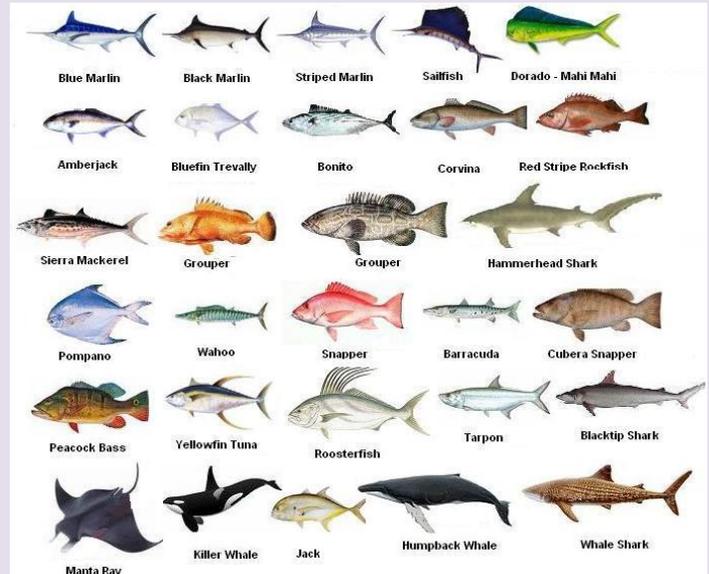
Evidence of evolution



Can you list the forms of evidence for evolution?

Adaptations

Some traits give organisms an advantage over organisms that lack that trait.

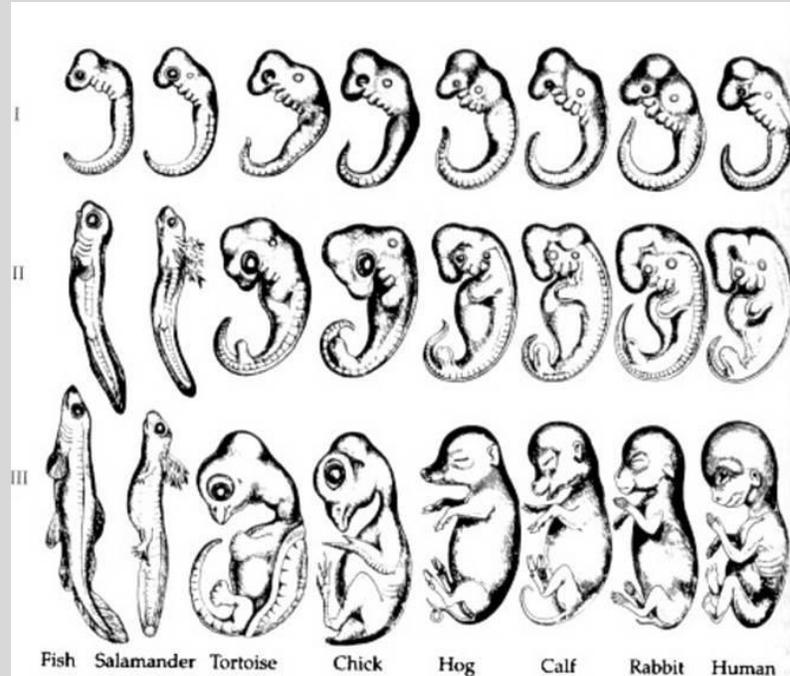
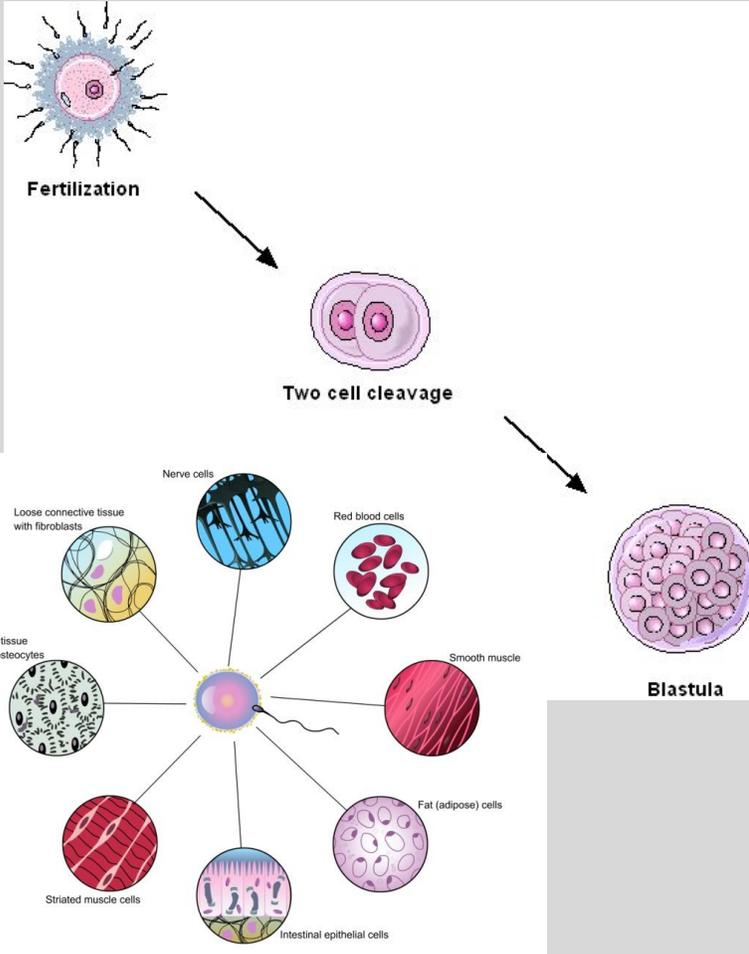


Natural selection

Can you summarize each of the following?

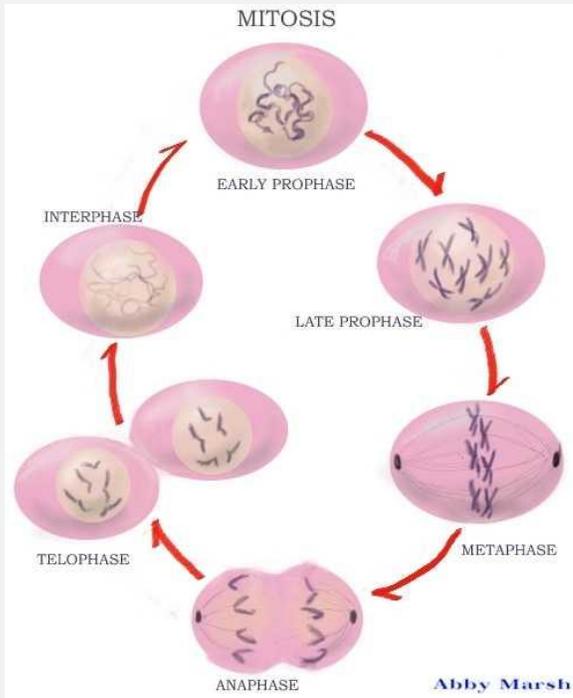
- Overproduction
- Struggle for survival
- Variation amongst offspring
- Survival of the fittest

Differentiation / embryology

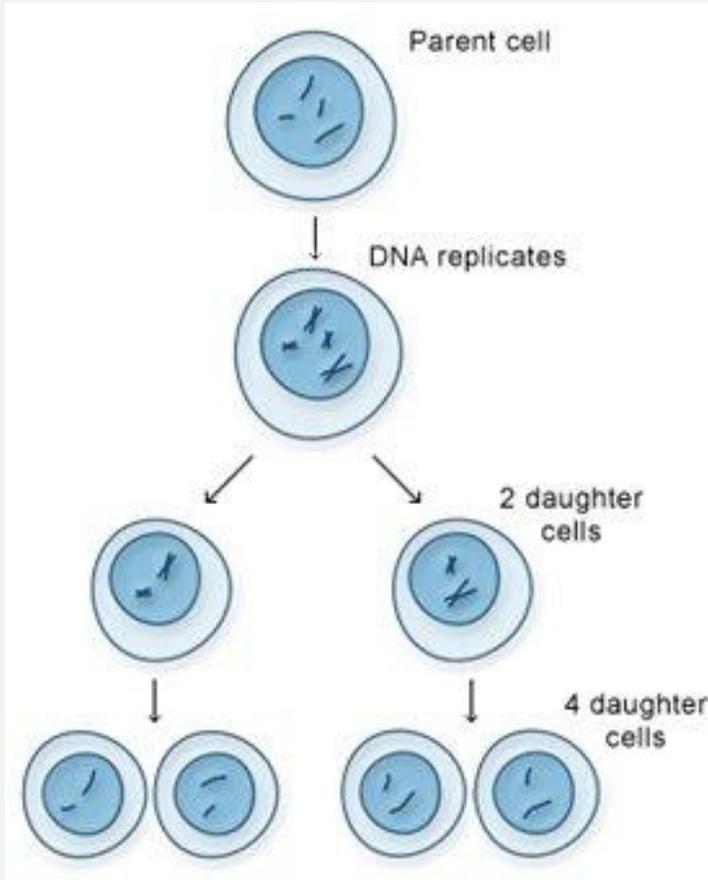


Mitosis

- What types of cells multiply this way?
- How many cells are produced?
- How do the new cells compare to the original?



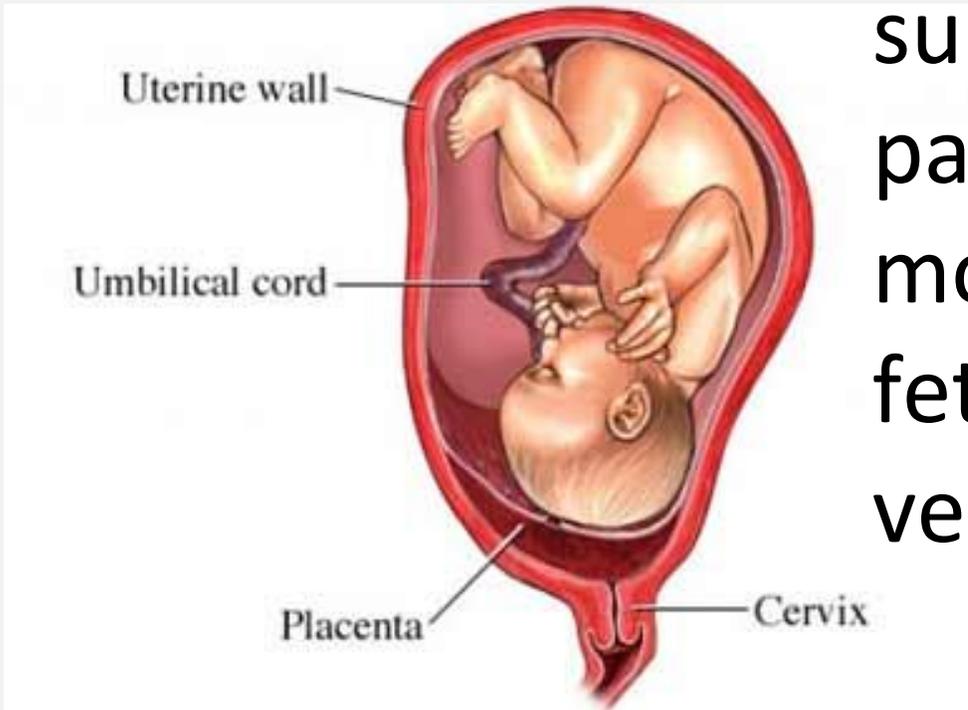
Meiosis



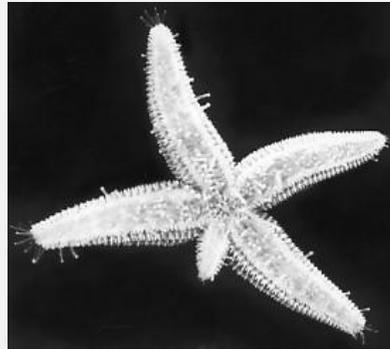
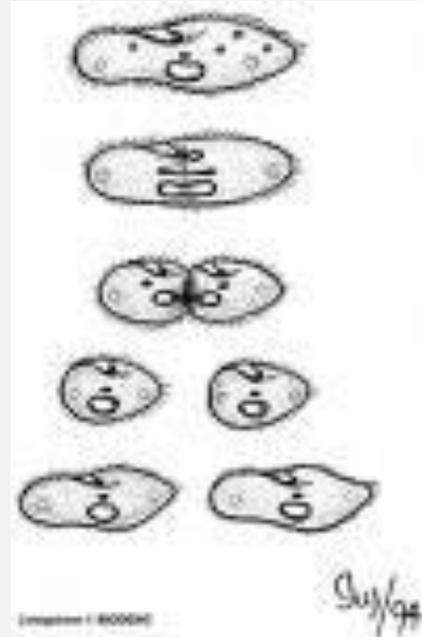
- What types of cells multiply this way?
- How many cells are produced?
- How do the new cells compare to the original?

Placenta

How do substances pass from the mother to the fetus and vice versa?



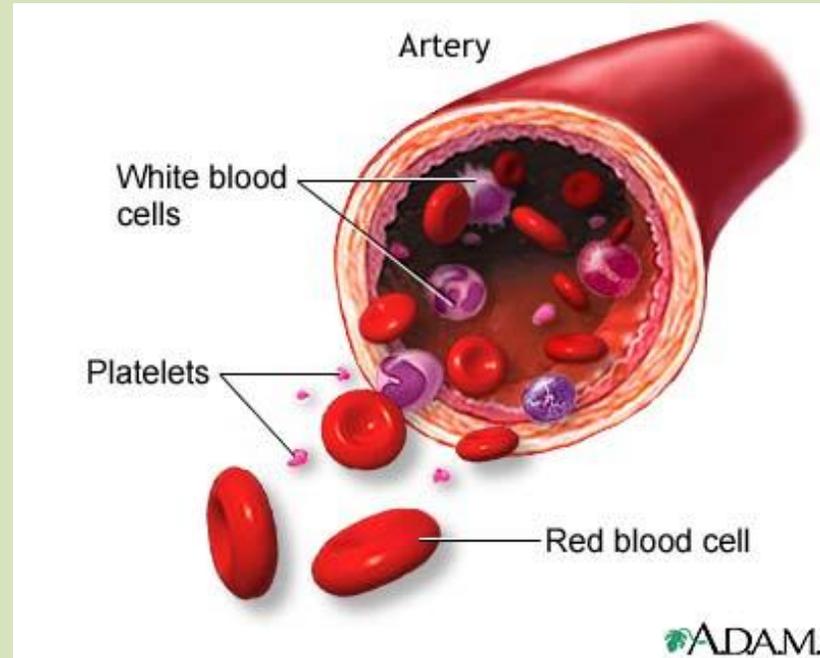
Asexual reproduction



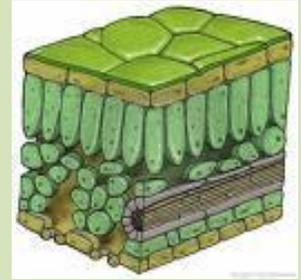
Can you list the different forms of asexual reproduction?

Homeostasis

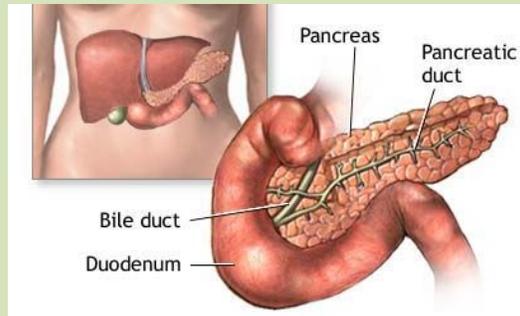
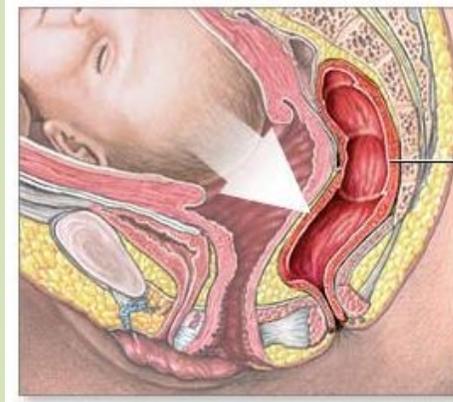
- What is the definition of homeostasis?
- How is the maintenance of a stable body temperature an example?
- How is the blood involved with maintaining homeostasis?



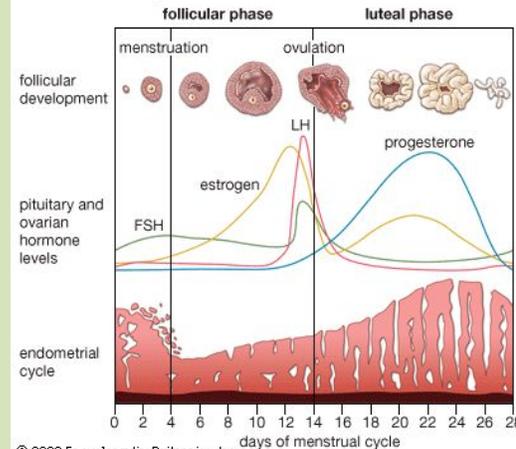
Feedback mechanisms



List as many examples of feedback mechanisms as you can think of.

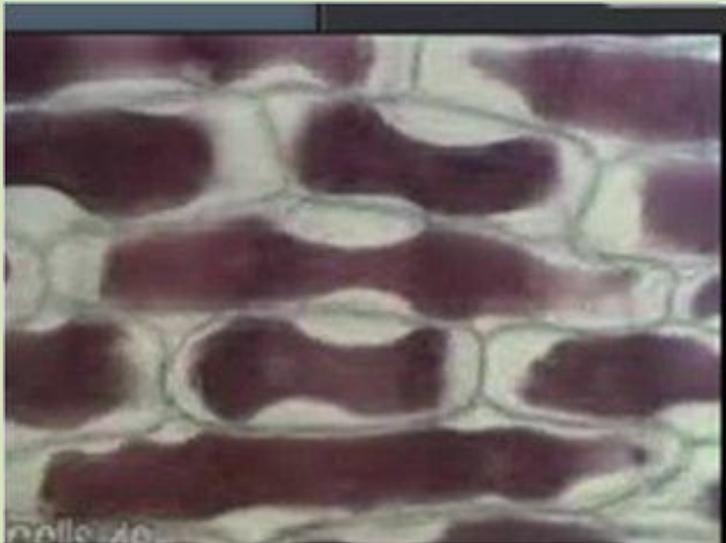


The menstrual cycle



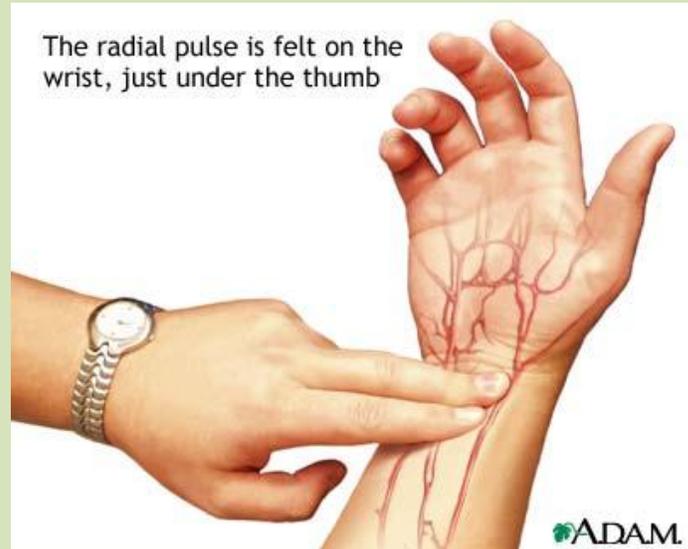
Diffusion through a membrane

- How does salt water affect the size of the cell?
- How does distilled water affect the size of a cell?



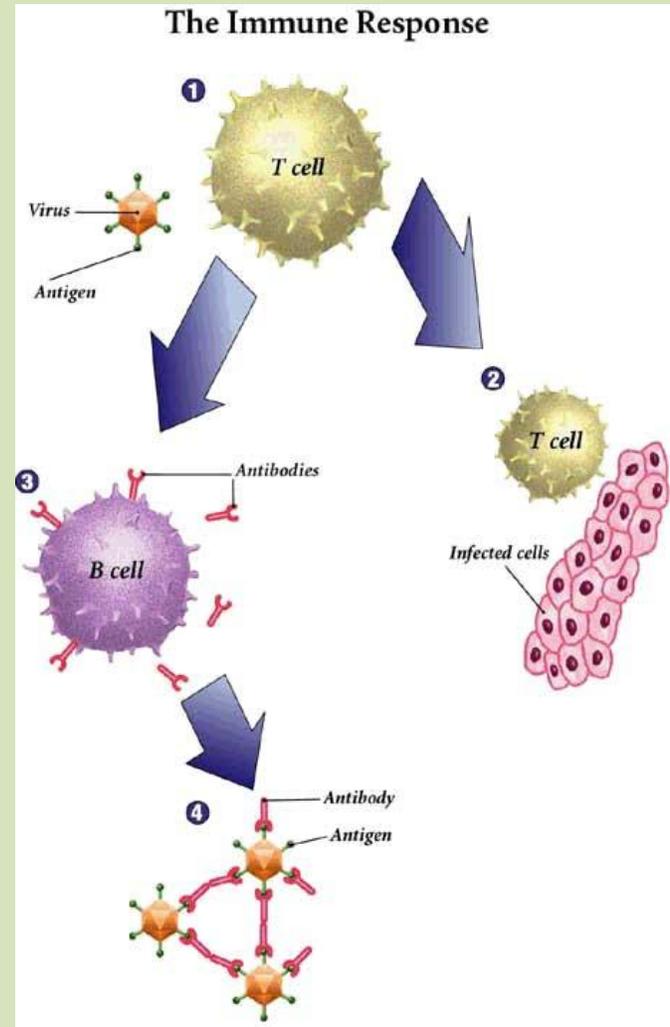
Pulse rate changes

- How does intense activity affect pulse rate?
- Why?



Immune response

How do the cells of the immune system work together to protect you from disease?

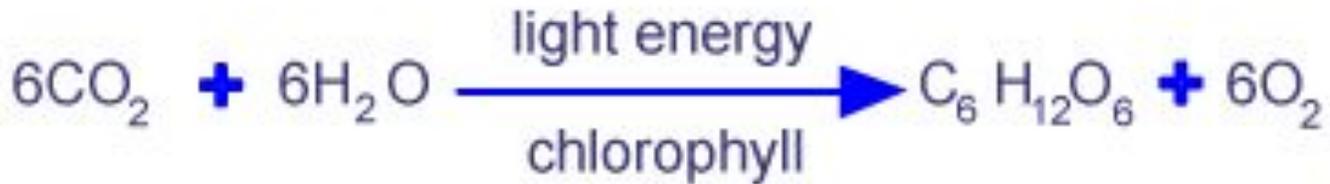


Vaccinations

How
does a
vaccine
work?



Photosynthesis



- When and where does this process take place?
- In what types of organisms does this process take place?
- What are the reactants?
- What are the products?

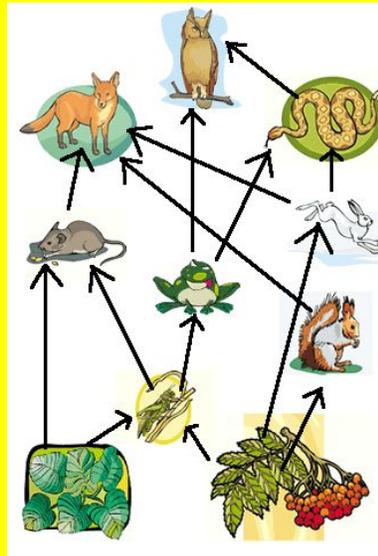
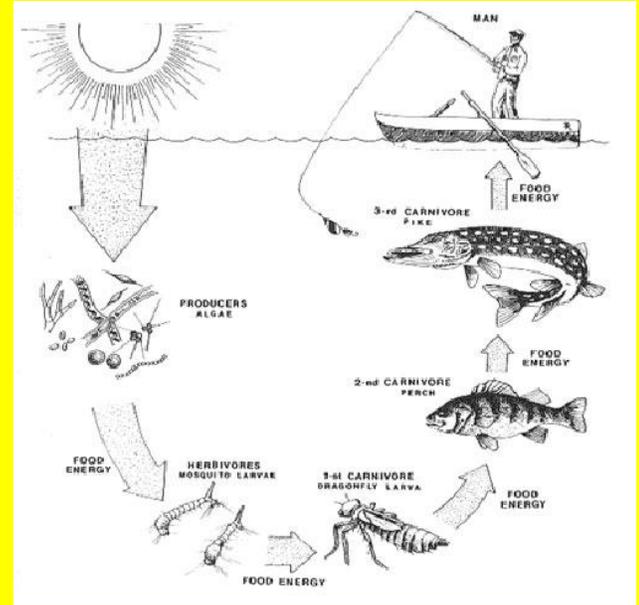
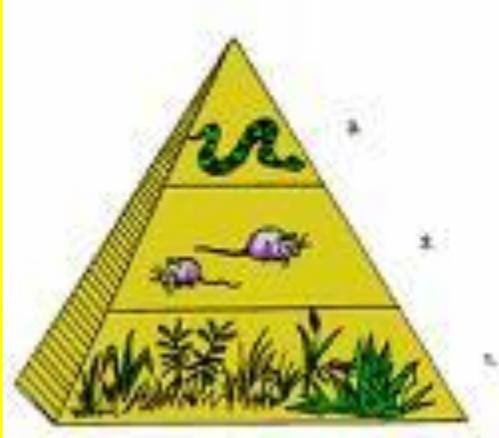
Respiration

- When and where does this process take place?
- In what types of organisms does this process take place?
- What are the reactants?
- What are the products?

Cellular Respiration



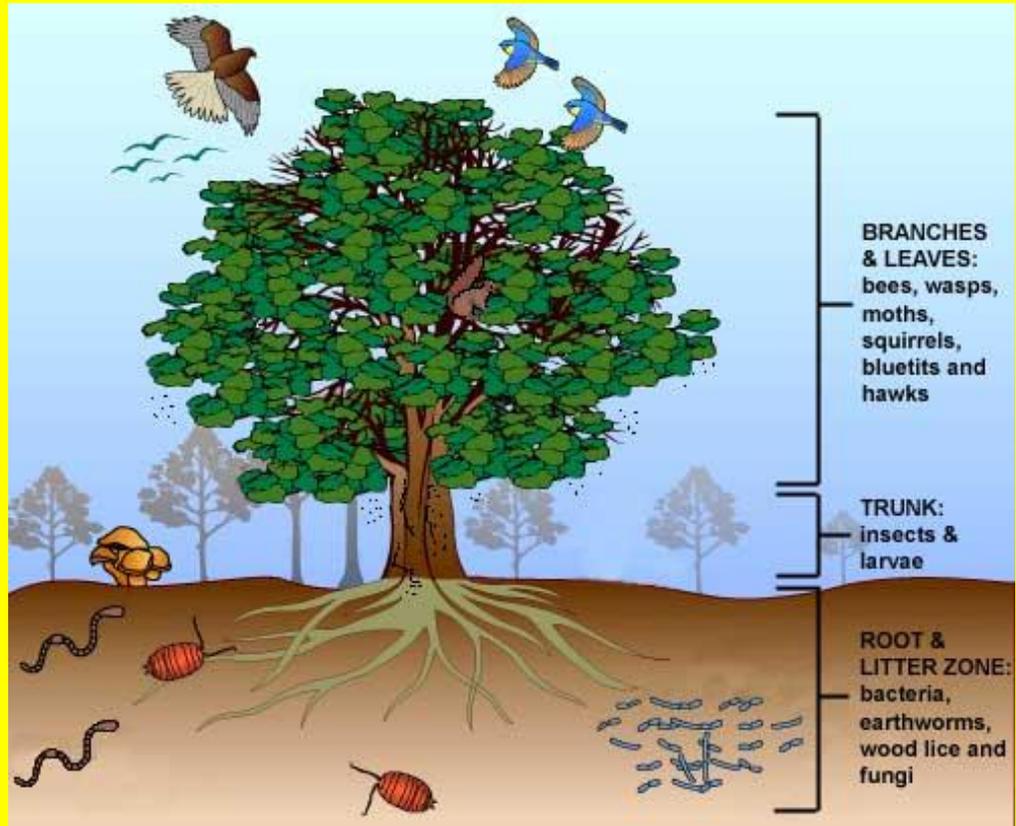
Energy pyramids, food chains, food webs



- How much energy is passed from one level to the next?
- What is the original source of energy for all ecosystems?

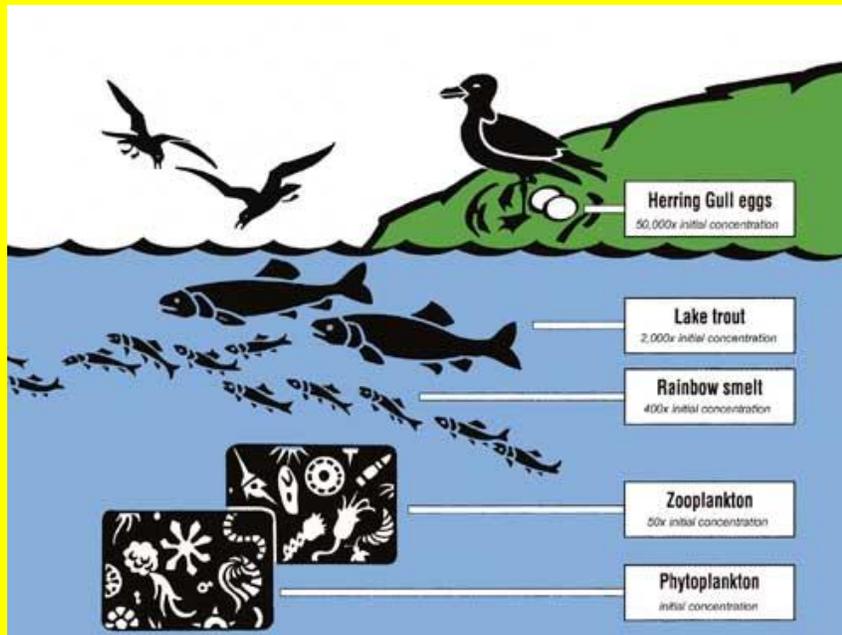
Ecosystems

- What is an ecosystem?
- What features are required to be considered an ecosystem?
- What are some abiotic and biotic ecosystem factors in the picture to the right?



Biomagnification

Can you explain what happens during this biological process?



Biodiversity

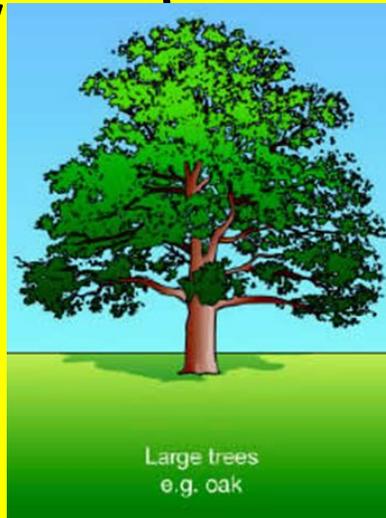
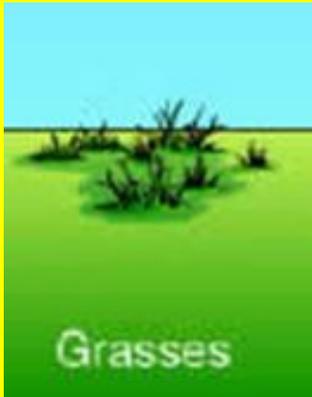
- What is it?
- Name 3 reasons

biodiversity is so important.

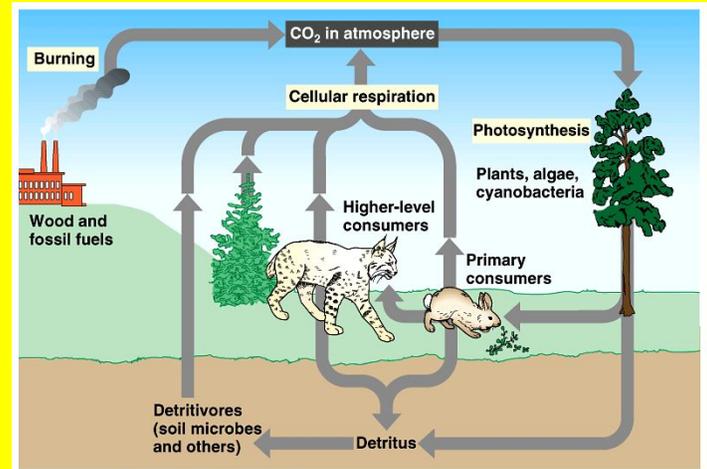
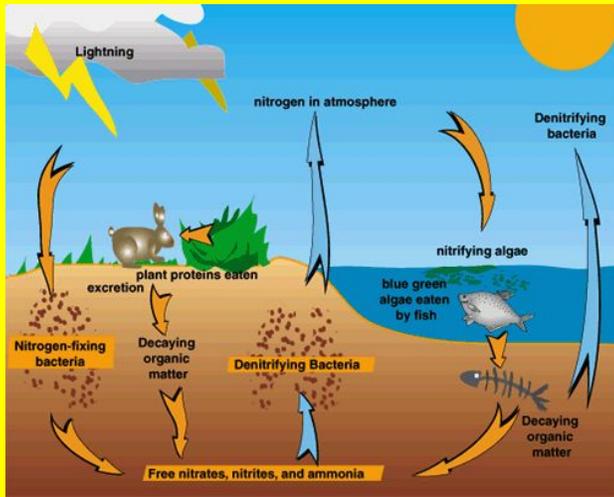
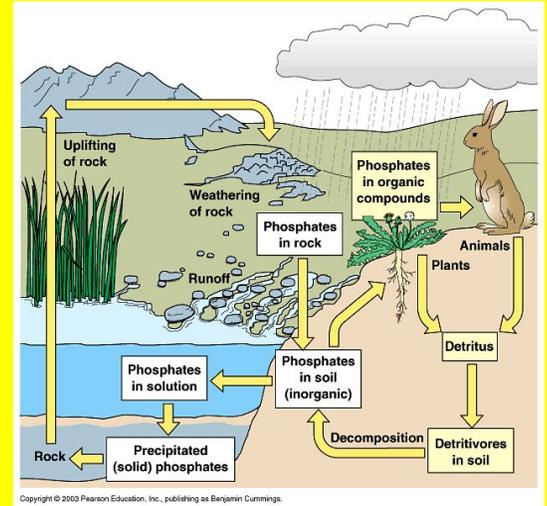
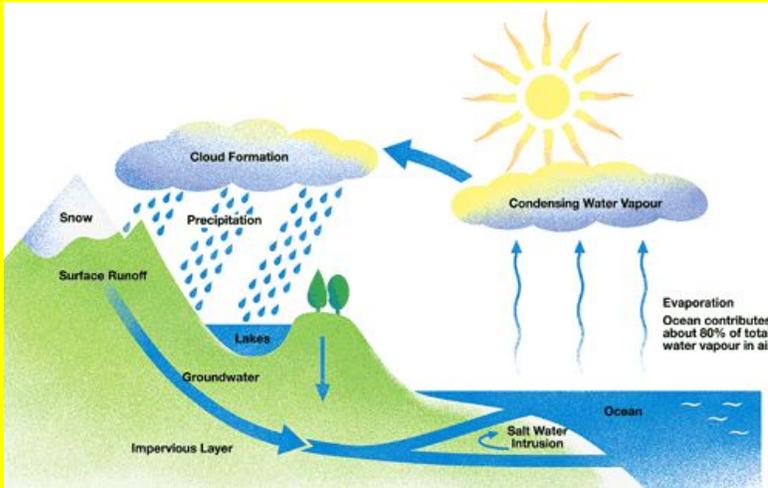


Succession

- Place the pictures in their proper sequence.
- What is the last stage known as?



Biogeochemical cycles

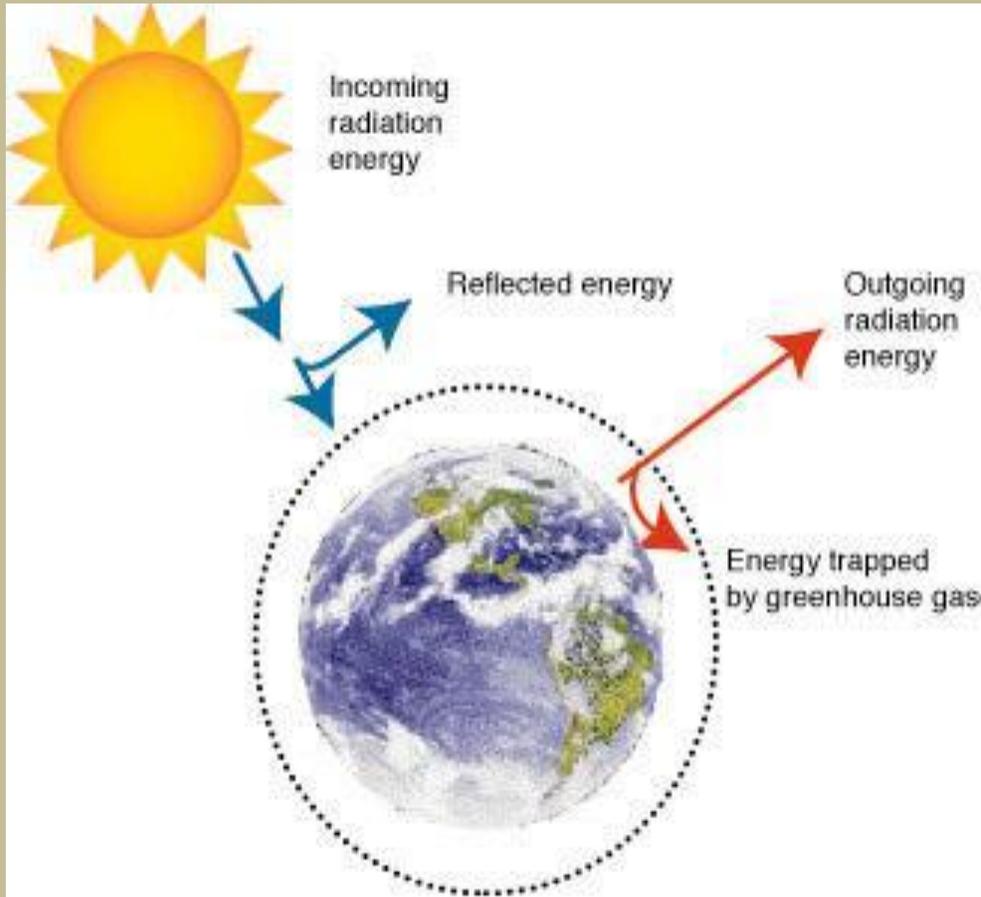


Overpopulation

Why is the ever increasing population of humans on earth the cause of all other environmental problems?



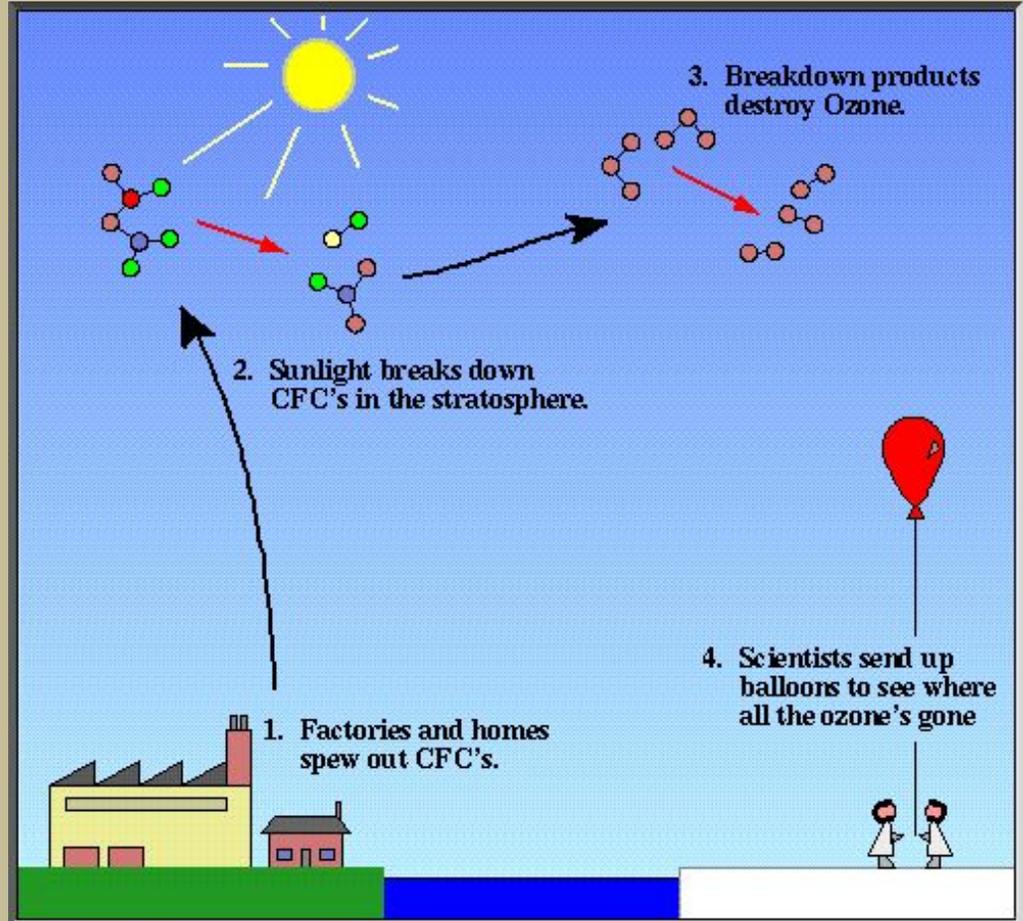
Global warming



Name human activities that cause the increases in average global temperatures.

Ozone depletion

- What is the cause?
- What is the effect?



Burning fossil fuels

- List activities that do this.
- What environmental problems does this cause?



Alternate energy sources

- Name some different forms.
- Why are they better for the environment?



Recycling

Why is it
better for the
environment?



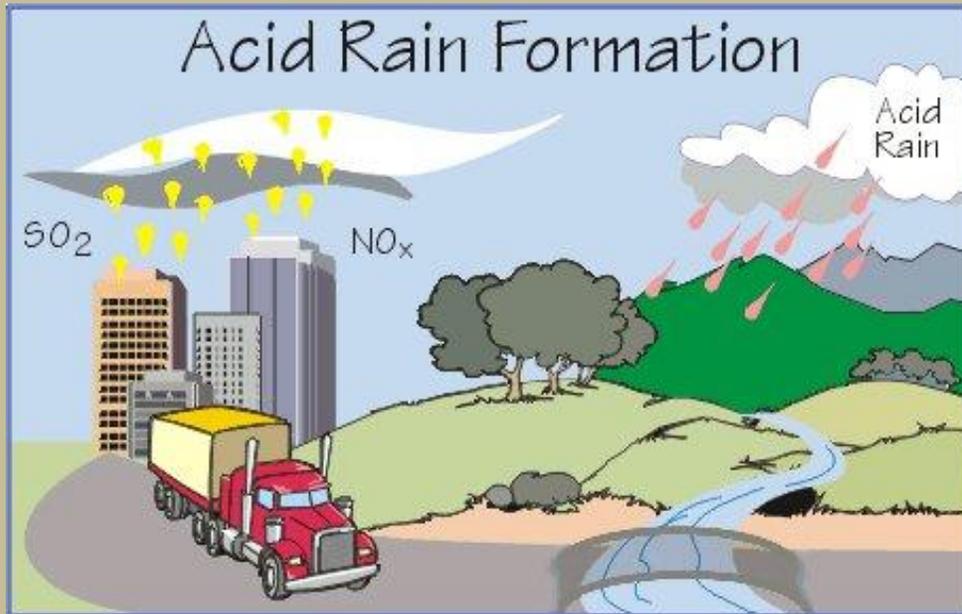
Habitat destruction / deforestation

Why is it so bad for the environment?



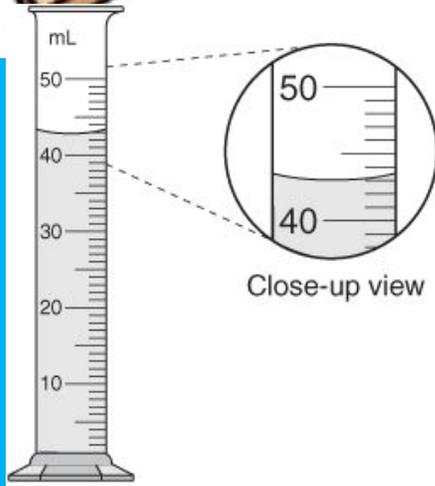
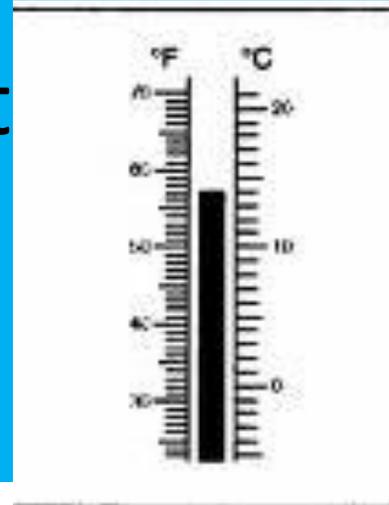
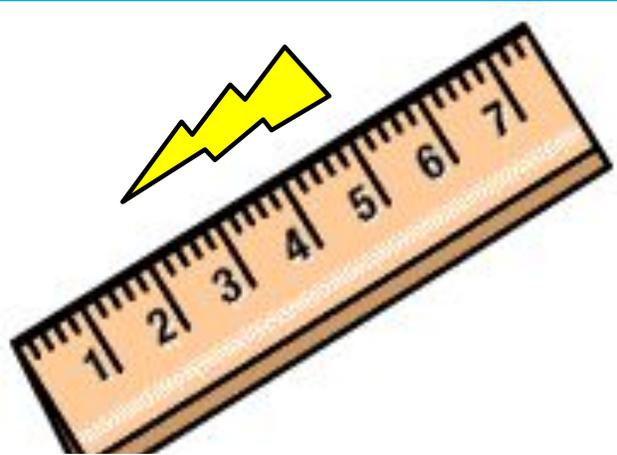
Acid rain

What causes it?



Why
is it
bad?

Metric measurement



Close-up view

Graduated cylinder

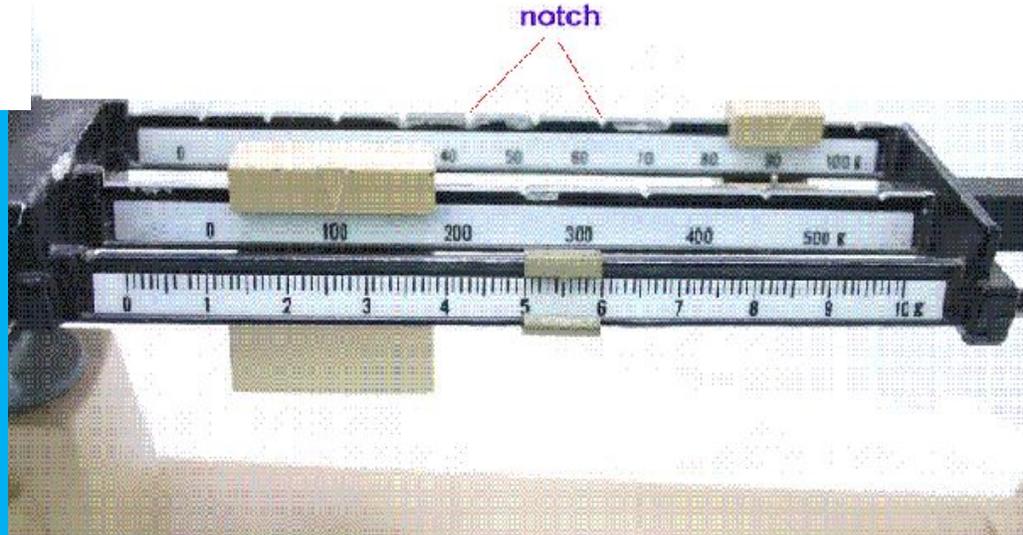
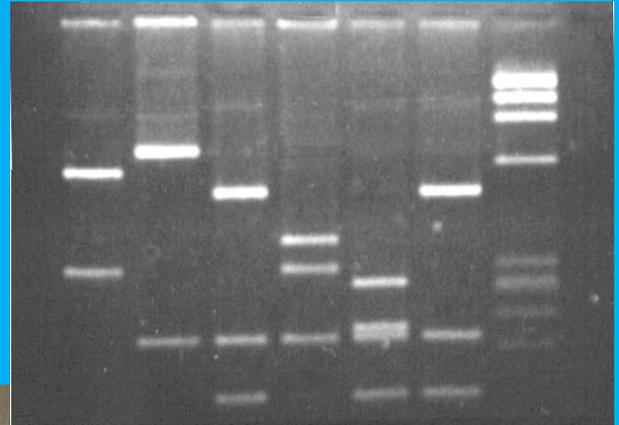
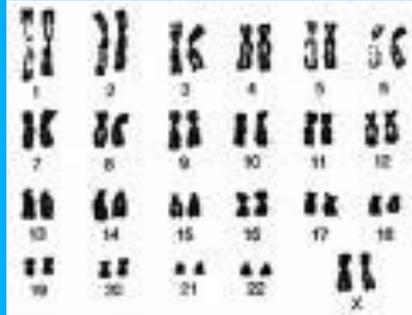


Fig. 4.1

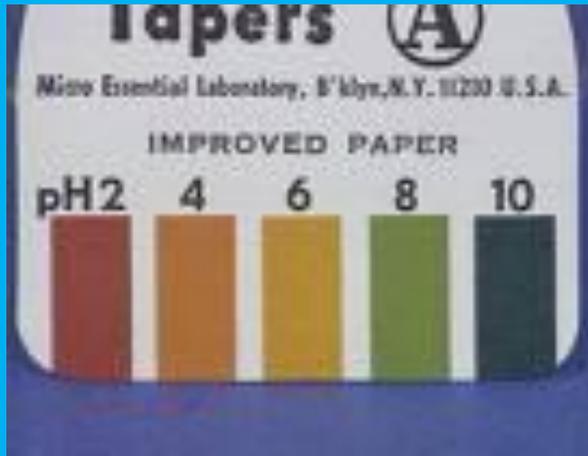
Lab techniques



Indicators



- What is each one used to detect?
- What color do they turn?



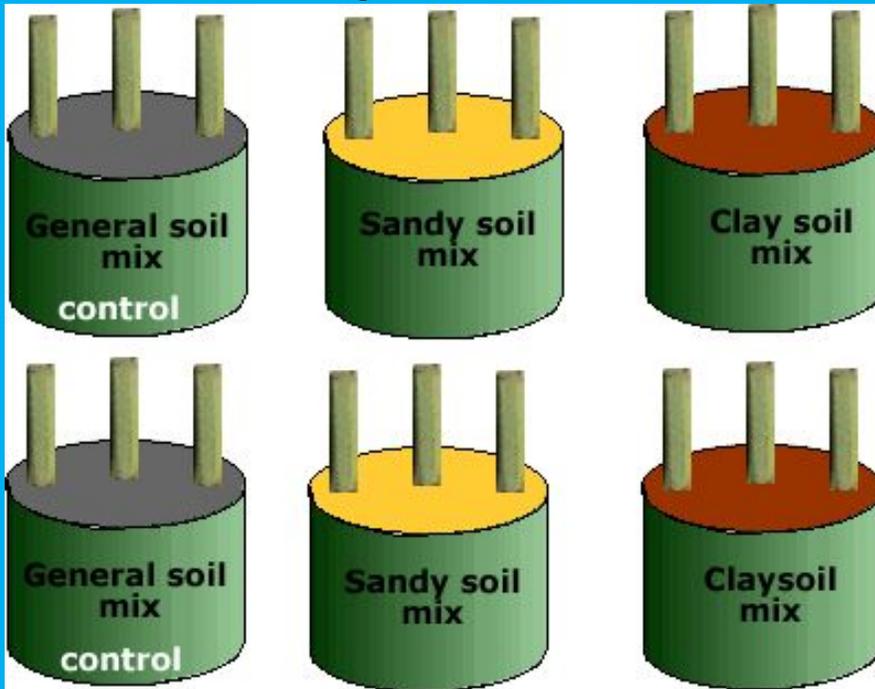
Dependent / independent variables

- Corn seed germination study testing the effect of fertilizer
- Which variable is the cause and which one is the effect?



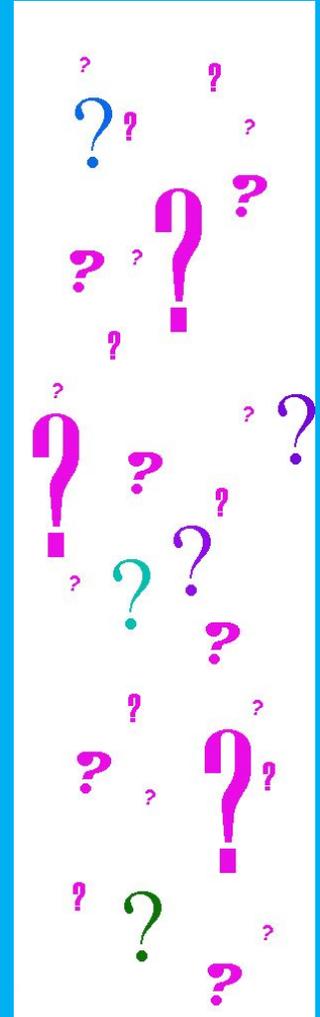
Control

Why is it included in all experiments?



Hypothesis

Can you form a hypothesis (stated correctly) for an experiment testing the effect of talking to a plant on its growth?



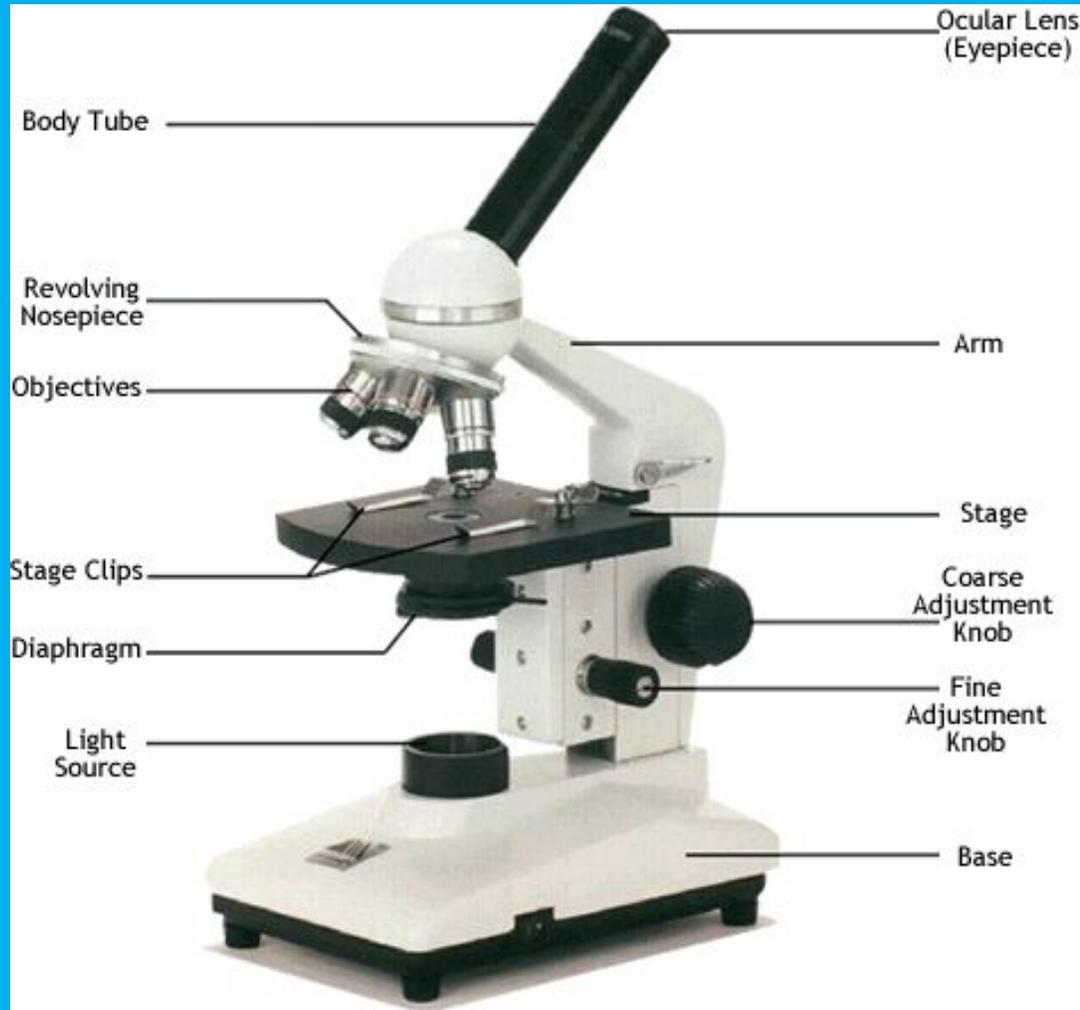
Procedure

Remember that a procedure for an experiment must be detailed and listed step-by-step, numerically, working down a page:

1. Calculate resting pulse rate by counting heartbeats in a 30-second interval and multiplying by 2 and record your results.
2. Repeat step 1.
3. Do 30 push-ups.
4. Calculate pulse rate by counting heartbeats in a 30-second interval and multiplying by 2 and once again record your results.
5. Repeat steps 3 and 4.
6. Calculate average pulse rate after resting and after doing push-ups and compare.

Compound light microscope

- Can you identify all of the parts?
- Do you know what each part is used for?



Dichotomous key

- 1a. wings covered by an exoskeleton**go to step 2**
1b. wings not covered by an exoskeleton**go to step 3**
- 2a. body has a round shape**ladybug**
2b. body has an elongated shape**grasshopper**
- 3a. wings point out from the side of the body
dragonfly
3b. wings point to the posterior of the body**housefly**

