

Bridging the Gap Between A-Level and GCSE Biology

This booklet belongs
to _____

Tick when complete...

Cells

☐

Biological Molecules

☐

Plants

☐

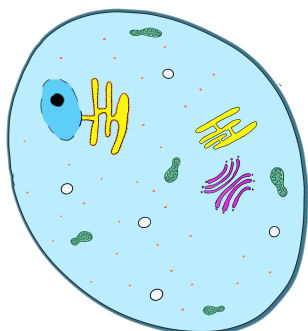
Disease and Immunity

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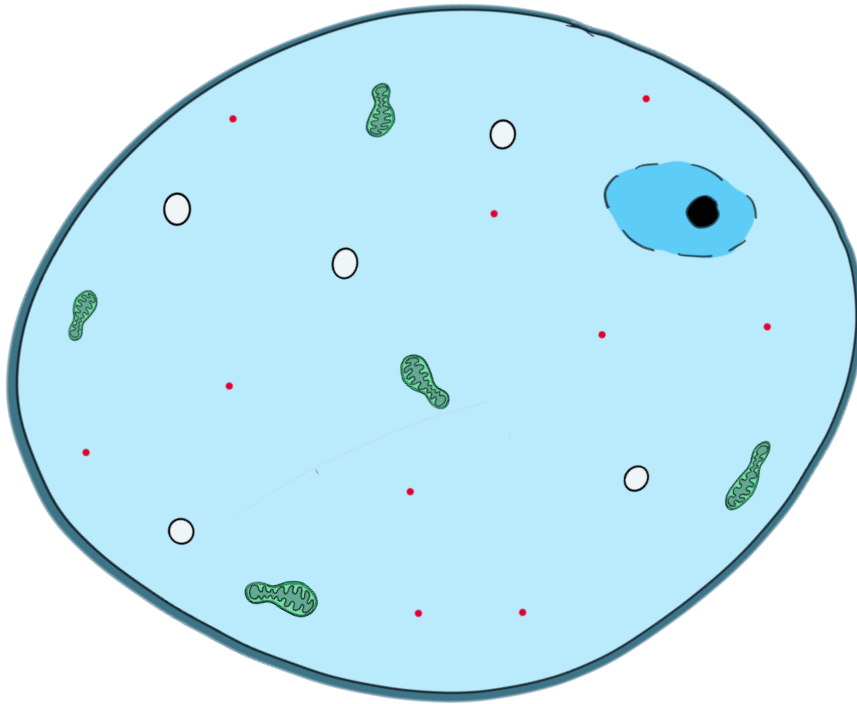
Circulatory System

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Variation, Evolution and Classification

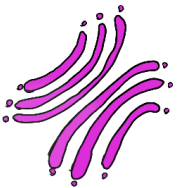
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Cells



Label the cell with the words nucleus, cell membrane, mitochondria, ribosome, cytoplasm.

These components are called organelles. At A-level, you have to know about some extra organelles.



The Golgi Apparatus – processes and packages lipids and proteins (you will learn more about these later but lipids are essentially fats)



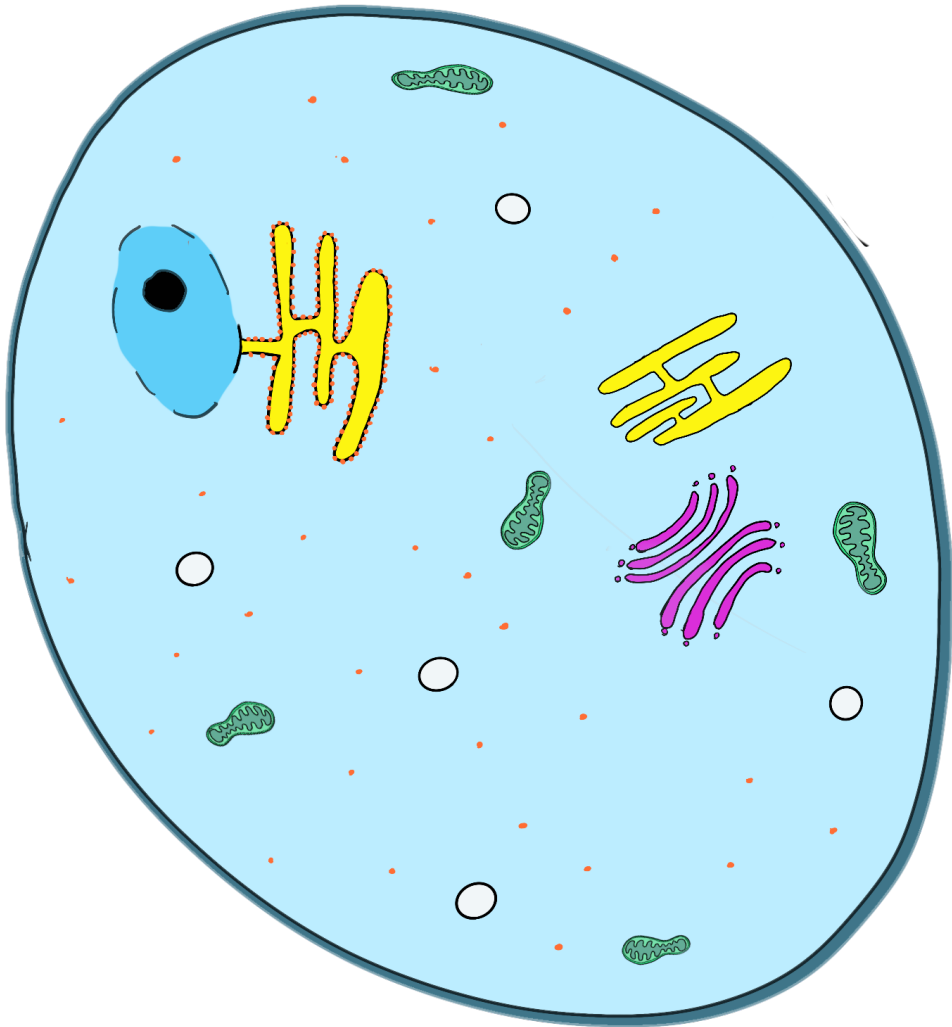
The smooth endoplasmic reticulum (SER) – folds and processes lipids.



The rough endoplasmic reticulum (RER) – folds and processes proteins. It is rough because it is covered in ribosomes.

On the next page, label the cell with these new organelles, the organelles you already knew about and write a brief sentence describing the purpose of each organelle.

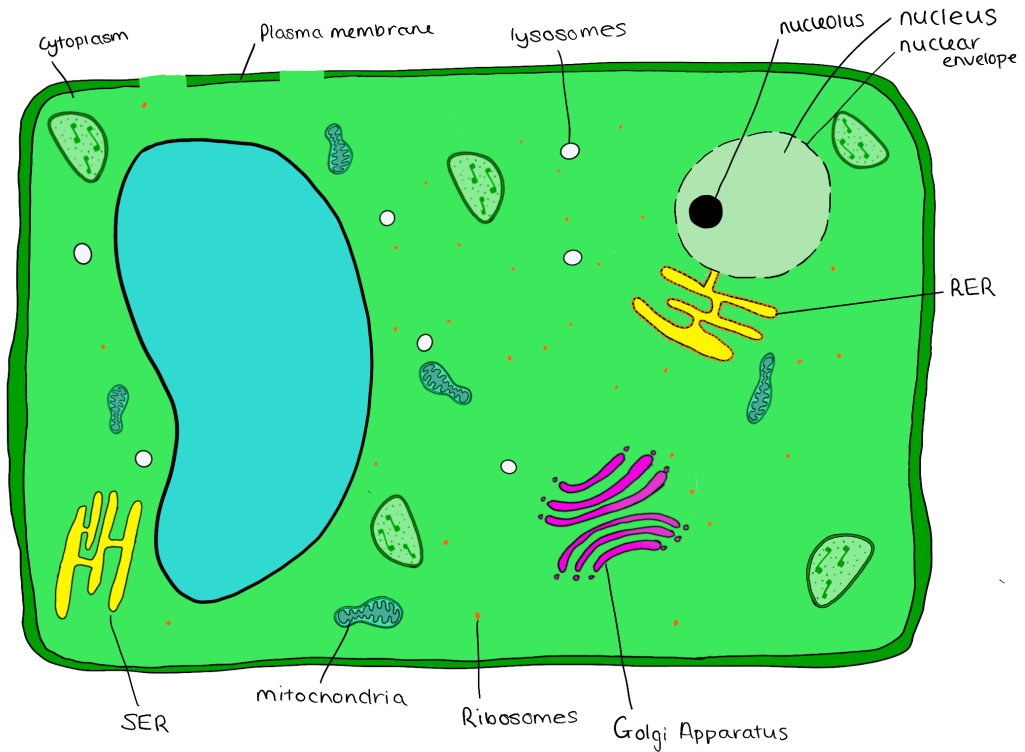
Animal Cells



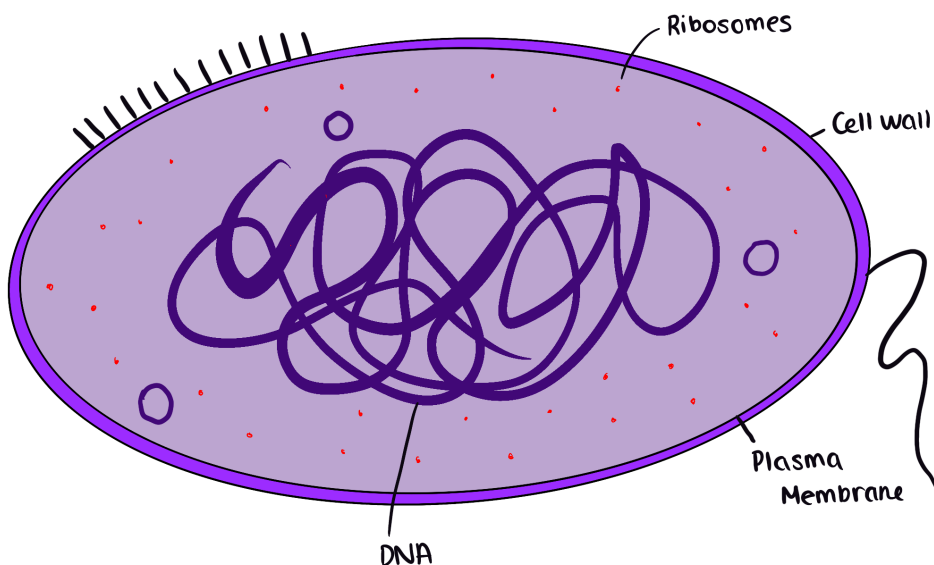
Animal cells are eukaryotic which means _____. Bacterial cells are _____ which means they have no true nucleus.

Plant Cells

Plant cells are also eukaryotic. Add labels to the organelles found in only in plant cells, not animal cells. The organelles that can be found in both are already done for you...



This is a bacterial cell, it has no nucleus, therefore it is _____. These cells are smaller than eukaryotic cells and have no membrane bound organelles e.g. mitochondria, nucleus. They do have ribosomes. There are circular pieces of DNA called _____ (label them on the diagram).



Biological Molecules

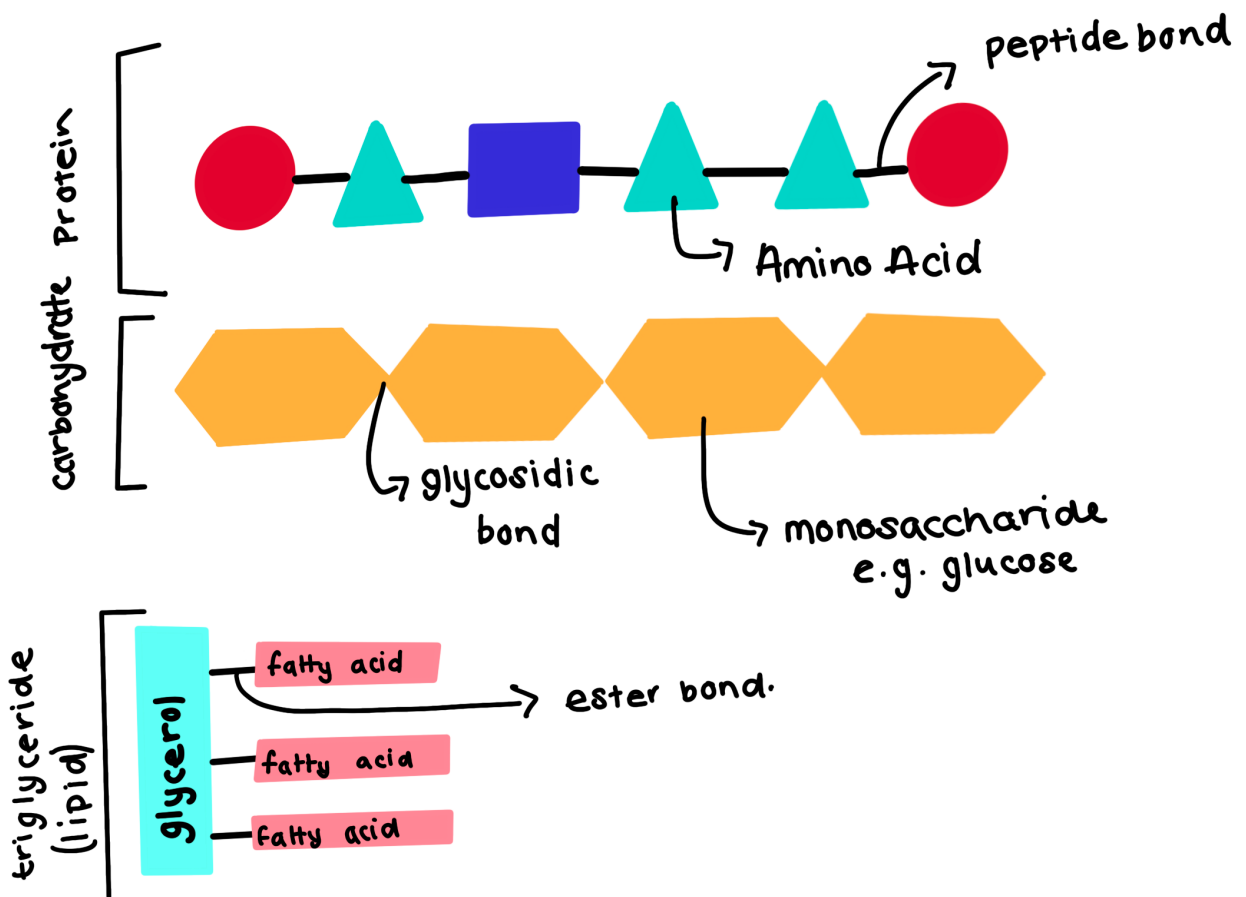
What are biological molecules?

Biological molecules are small organic molecules that make up the larger molecules we need to live. They include proteins, lipids and carbohydrates.

Some key definitions...

Monomer – a molecule that can react with others of its kind to form a polymer.

Polymer – a larger molecule made up of lots of monomers joined together.



Match the monomers with the polymers and the bonds.

Monomers
Amino acid
Monosaccharide (e.g. glucose)
Fatty Acids

Polymers
Carbohydrate
Protein
Lipid

Bonds
Ester
Glycosidic
Peptide

Name some proteins and their roles...

Name some carbohydrates and their roles...

Name some lipids and their roles...

What is an enzyme?

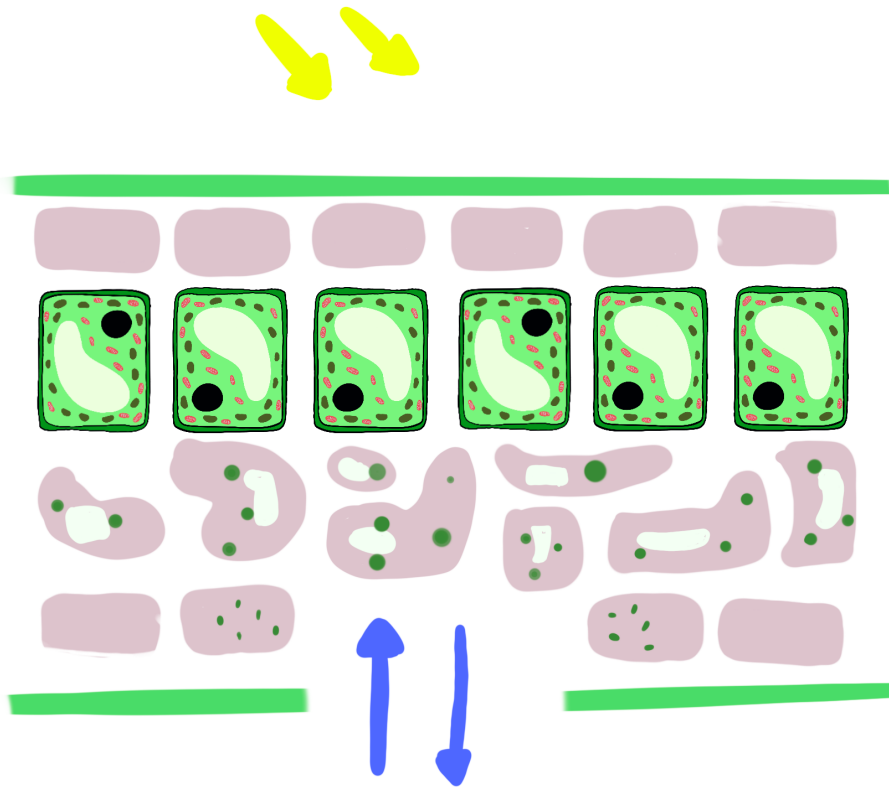
Explain the lock and key hypothesis

Research 'The Induce Fit Model' and explain what it means.

Name some factors that affect enzyme activity...

Plants

Label this cross section of a leaf...



Fill in the gaps

Translocation occurs in the _____ it is the movement of _____ up and down the plant.

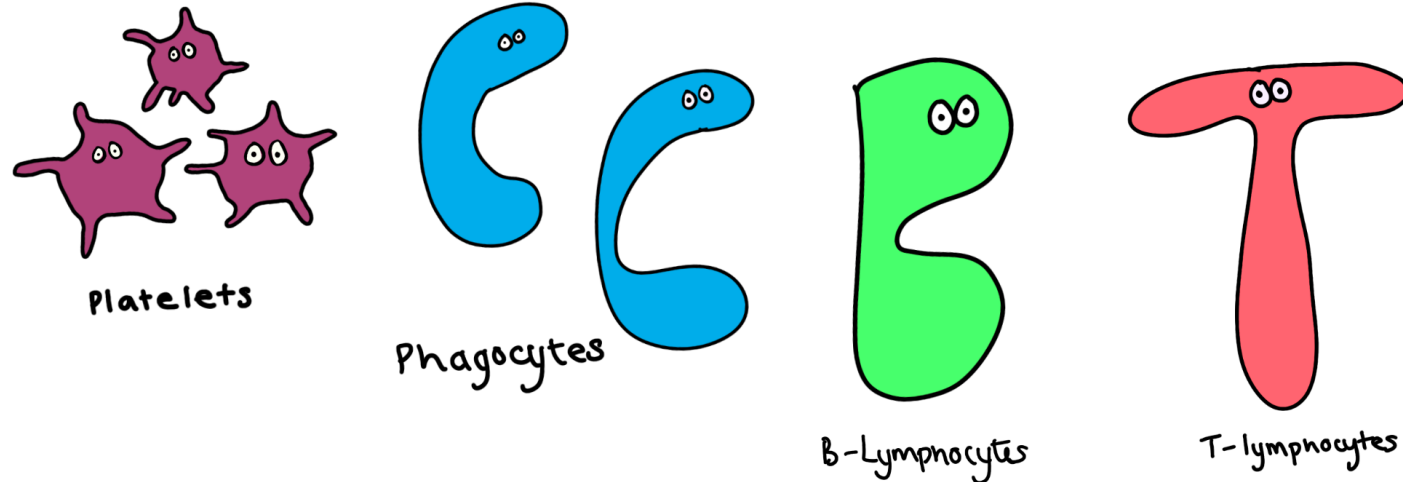
Transpiration occurs in the _____ it is the movement of _____ up the plant.

Disease and Immunity

Risk Factors for Disease – what changes can people make to their lives to lower their risk of disease?

-
-
-
-
-

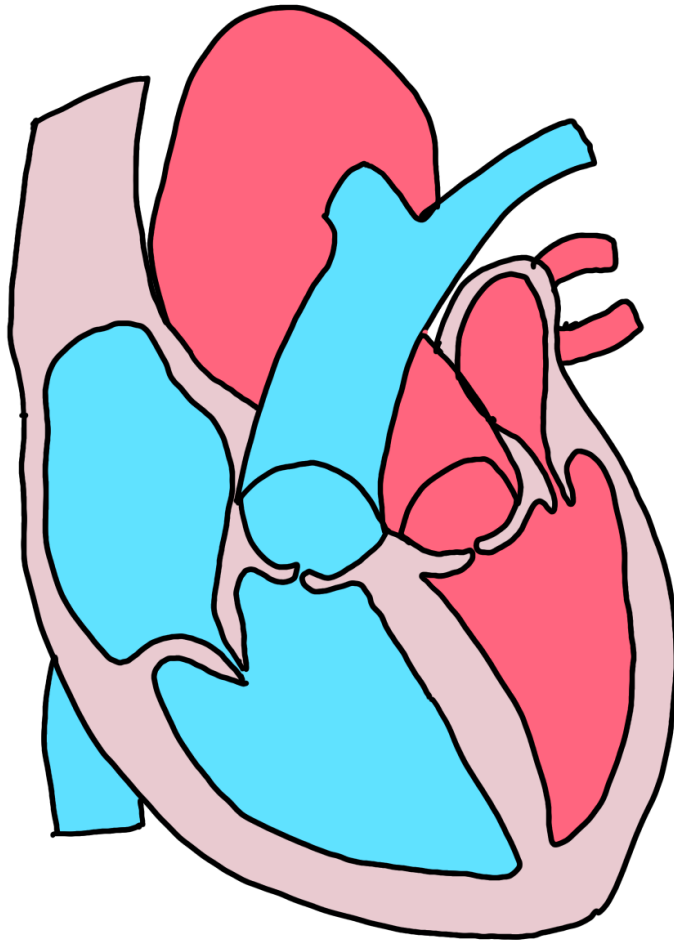
Types of White Blood Cell



Research the functions of these types of white blood cell and write them below each cell.

The Circulatory System

Label this diagram of the human heart...



Valves

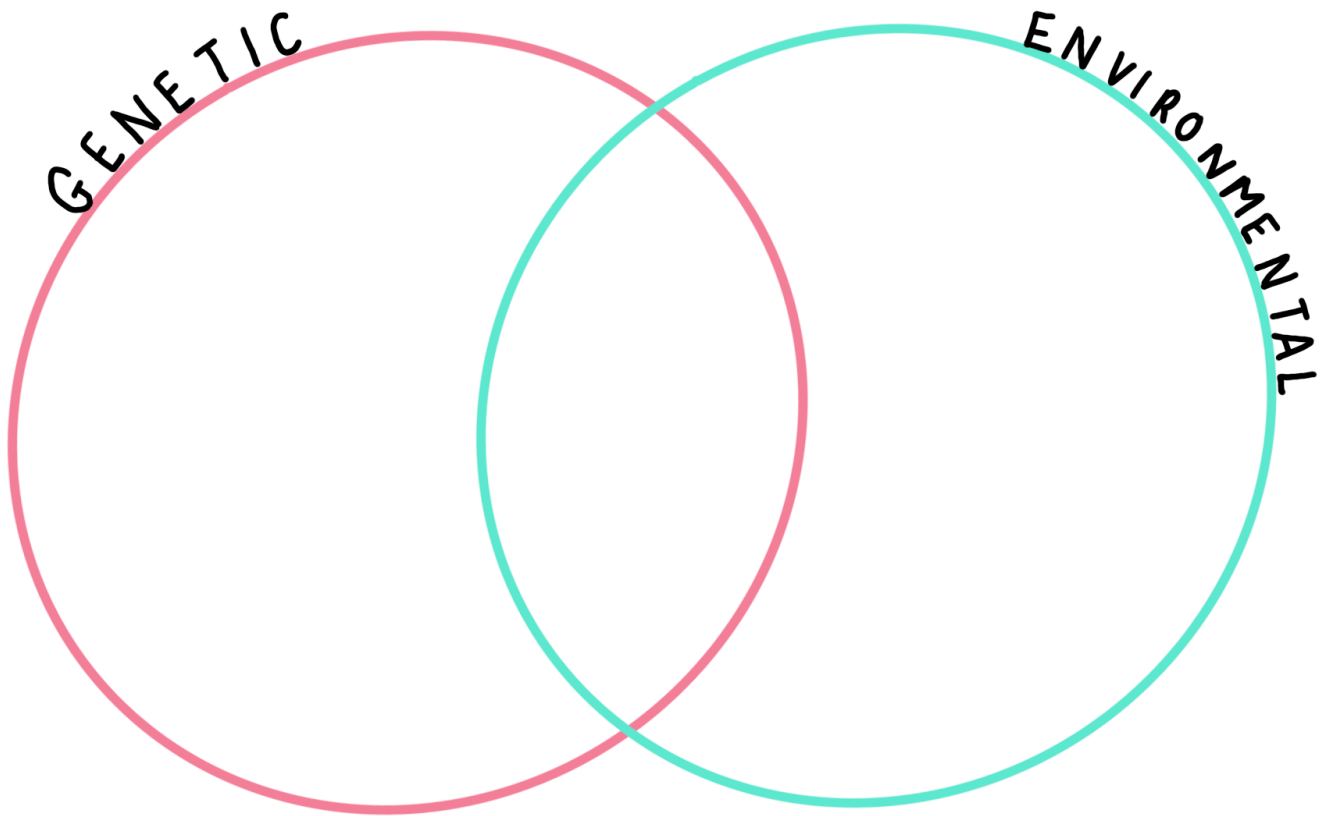
Valves are found in veins and in the heart, they prevent backflow of blood. There are two types of valve in the human heart:

- **Atrioventricular valves** – these prevent backflow of blood from the ventricles back into the atria
- **Semilunar Valves** – these prevent backflow of blood from the major arteries back into the ventricles.

Label the valves on the diagram above.

Variation, Evolution and Biodiversity

Variation within a species is what makes us individuals. Sometimes, variation is caused by genes, some by the environment. Fill out this Venn diagram with features that are caused by genes, the environment and both!



Variation means some organisms are better adapted.

What is an adaptation?

Give an example of a species and how they have adapted to their environment.

Final Project

Research Charles Darwin and his theory of Natural Selection. Write newspaper article explaining how he came up with this theory and what the theory is.