Edexcel Biology IGCSE

2.a-2.d - Cells and Biological Molecules

Flashcards

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Define tissue

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Define tissue

A group of cells working together to carry out a specific function.

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Define organ

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Define organ

A group of tissues working together to carry out a specific function.

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Define organ system

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Define organ system

A group of organs working together to carry out a specific function.

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How is the labour divided within a cell?

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How is the labour divided within a cell?

Within a cell, labour is divided between the organelles

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Name 5 parts of an animal cell

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Name 5 parts of an animal cell

- Nucleus
- Mitochondria
- Ribosomes
- Cell membrane
- Cytoplasm

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Name 8 parts of a plant cell

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Name 8 parts of a plant cell

Nucleus, mitochondria, ribosomes, cell membrane, cytoplasm, permanent vacuole, chloroplasts, cell wall

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State 2 functions of the nucleus

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State 2 functions of the nucleus

- Controls the cell
- Contains genetic material (in the form of chromosomes)

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What is the function of the cytoplasm?

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What is the function of the cytoplasm?

It is where most of the cell's chemical reactions take place.

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State the function of mitochondria

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State the function of mitochondria

They are the site of aerobic respiration.

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State the function of ribosomes

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State the function of ribosomes

They are the site of protein synthesis.

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What is the function of the cell wall and what is it made of?

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What is the function of the cell wall and what is it made of?

It provides strength and support. It is made of cellulose.

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What is the function of the permanent vacuole and what does it contain?

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What is the function of the permanent vacuole and what does it contain?

It supports the cell and contains cell sap (a solution of sugars and salts).

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What is the function of chloroplasts?

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What is the function of chloroplasts?

They are the site of photosynthesis.

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What is the function of the cell membrane?

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What is the function of the cell membrane?

- Controls what enters and leaves the cell
- Separates the cell from its environment

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What is differentiation? (Higher)

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What is differentiation? (Higher)

The process by which cells become specialised

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What are stem cells? (Higher)

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What are stem cells? (Higher)

Stem cells are unspecialised cells that can differentiate into lots of different types of cells.

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Give 3 advantages of using stem cells in medicine (Higher)

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Give 3 advantages of using stem cells in medicine (Higher)

- Stem cells can be used to treat paralysis
- Stem cells have the possibility to cure degenerative diseases like Parkinson's
- Whole new tissues or organs can be grown that can be used to test drugs on

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Give 3 disadvantages of using stem cells in medicine (Higher)

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Give 3 disadvantages of using stem cells in medicine (Higher)

- Using embryonic stem cells can raise ethical issues
- It is expensive
- Long term side effects are unknown

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What chemical elements are present in carbohydrates?

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What chemical elements are present in carbohydrates?

Carbon, hydrogen, oxygen (C,H,O).

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What chemical elements are present in lipids?

CC BY NC ND

What chemical elements are present in lipids?

Carbon, hydrogen and oxygen (C,H,O).

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What chemical elements are present in proteins?

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What chemical elements are present in proteins?

Carbon, hydrogen, oxygen, nitrogen and sulfur (C,H,O,N,S).

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What are complex carbohydrates like starch and glycogen made up of?

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What are complex carbohydrates like starch and glycogen made up of?

Simple sugars

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What are proteins made up of?

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What are proteins made up of?

Proteins are made up of amino acids.

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What two molecules are lipids made up of?

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What two molecules are lipids made up of?

Glycerol and fatty acid tails

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What are enzymes?

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What are enzymes?

Enzymes are biological catalysts that increase the rate of metabolic reactions.

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State 4 factors that affect enzyme function

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State 4 factors that affect enzyme function

- Temperature
- pH
- Substrate concentration
- Enzyme concentration

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Describe the effect of temperature on the rate of an enzyme-controlled reaction

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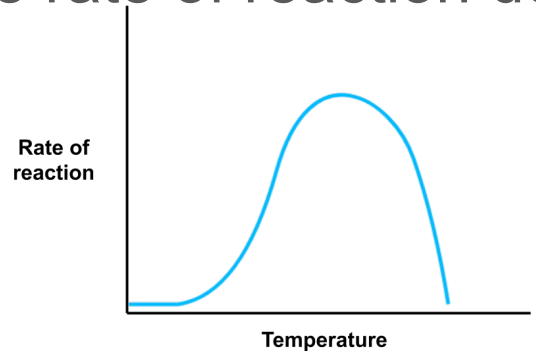
Describe the effect of temperature on the rate of an enzyme-controlled reaction

- As the temperature increases, so does the rate of reaction
- Once the temperature exceeds the optimum, the enzyme denatures and the rate of reaction decreases



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Why does the rate of an enzyme-controlled reaction increase when the temperature increases?

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Why does the rate of an enzyme-controlled reaction increase when the temperature increases?

- As the temperature increases the particles have more kinetic energy
- This increases the chance of collisions between molecules being successful and leading to a reaction

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If temperature increases above the optimum, how does this affect enzyme function?

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If temperature increases above the optimum, how does this affect enzyme function?

The active site will be distorted as the enzyme denatures and so it will no longer fit the substrate

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Describe the effect of pH on the rate of an enzyme-controlled reaction

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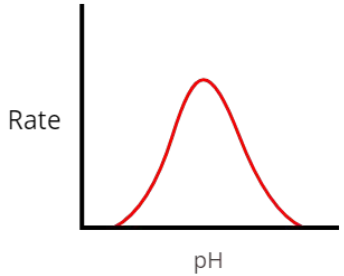
Describe the effect of pH on the rate of an enzyme-controlled reaction

- The rate of an enzyme catalysed reaction is fastest at the optimum pH
- If the pH is too high or low, the enzyme will work less efficiently and the active site may be denatured at extremes of pH



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Define diffusion

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Define diffusion

The net movement of molecules from an area of high concentration to an area of low concentration down their concentration gradient.

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How does temperature affect the rate of diffusion?

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How does temperature affect the rate of diffusion?

As the temperature increases, so does the rate of diffusion as the particles have more kinetic energy and move faster.

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How does the concentration gradient affect the rate of diffusion?

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How does the concentration gradient affect the rate of diffusion?

The greater the concentration gradient (the difference between the two areas), the faster the rate of diffusion.

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How does the surface area of the membrane affect the rate of diffusion?

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How does the surface area of the membrane affect the rate of diffusion?

As the surface area increases so does the rate of diffusion as there is more space for the particles to move through.

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Define osmosis

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Define osmosis

The net movement of water molecules from a high water potential to a low water potential down their water potential gradient across a partially permeable membrane.

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Define active transport

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Define active transport

The movement of molecules from a low concentration to a high concentration against their concentration gradient using energy.

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