LIGHT-DEPENDENT REACTIONS

How do the light-dependent reactions start?

-Light is absorbed by the chlorophyll in the thylakoid membranes of the chloroplast.

What does the energy from the light cause?

-It raises two electrons in each chlorophyll molecule to a higher energy level.

What state are the chlorophyll molecules now in?

-An excited state.

What happens to the electrons once they leave the chlorophyll molecules?

-They pass along a series of electron carrier molecules, which are embedded in the thylakoid membrane.

What do these molecules constitute?

-The electron transport chain.

How do the electrons pass from one carrier to another?

-Through a series of oxidation and reduction reactions, losing energy in the process.

How is the energy lost through these reactions used?

-It is used in the synthesis of ATP, in a process called photophosphorylation.

What must happen to the electrons lost from chlorophyll?

-They must be replaced in order for the flow of electrons along the electron transport chain is to continue.

What does the enzyme catalyse within the thylakoid space and what does it produce

-The splitting of water (photolysis) gives oxygen gas, hydrogen ions and electrons.

What do these electrons replace?

-The electrons that were emitted from the chloren hal

What does this result in?

-The chlorophyll molecule is no longer

tively char d. What happens as a result of photolysis?

-The house concentration within the onlast id space is raised.

What do the electrons that have passed along the ETC combine with?

-Co-enzyme NADP and hydrogen ions from the water.

What does this form?

-Reduced NADP

What is used from the light-dependent reactions in the light-independent reactions?

-The ATP and reduced NADP