

1. The first step in the process of photosynthesis is the light-dependent reaction, which occurs in the thylakoid membranes of the chloroplast. This reaction uses light energy to split water molecules into oxygen and hydrogen ions.

2. The second step is the Calvin cycle, which takes place in the stroma of the chloroplast. It uses the carbon dioxide from the air and the hydrogen ions from the light-dependent reaction to produce glucose.

3. The overall equation for photosynthesis is: $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$. This means that six molecules of carbon dioxide and six molecules of water react to produce one molecule of glucose and six molecules of oxygen.

4. The light-dependent reaction is the source of the oxygen that we breathe. It is also the source of the energy that drives the Calvin cycle.

5. The Calvin cycle is the source of the glucose that we eat. It is also the source of the energy that drives the light-dependent reaction.

6. The light-dependent reaction and the Calvin cycle are both essential for the production of glucose and oxygen. Without either one, photosynthesis would not be possible.

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