

# PHOTOSYNTHESIS

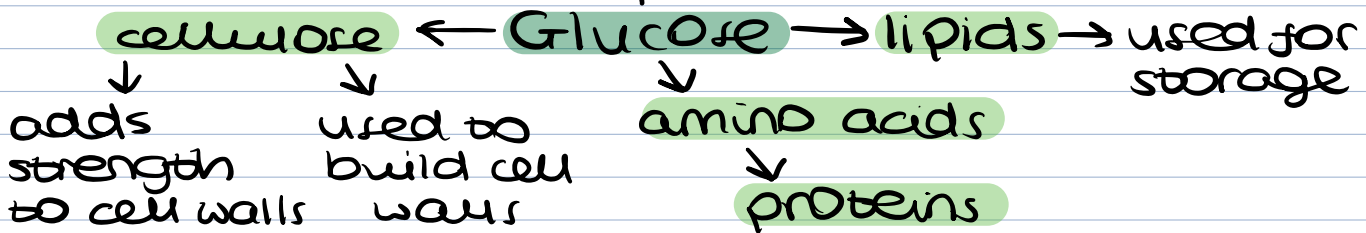
Photosynthesis equation  $\xrightarrow{\text{light}}$  chlorophyll

Carbon dioxide + water  $\xrightarrow{\text{light}}$  glucose + oxygen

- ↳ Photosynthesis is an endothermic reaction.
- ↳ The light energy is absorbed by a green pigment called chlorophyll.
- ↳ The carbon dioxide required comes from the air.
- ↳ The water required comes from the roots.
- ↳ The oxygen released is used for respiration and is also released into the atmosphere.

**TIP!**  
Respiration is the reverse reaction of photosynthesis.

Biosynthesis insoluble  $\leftarrow$  starch  $\rightarrow$  used for storage



## Factors affecting photosynthesis

↳ Ways to measure rate of photosynthesis

- ↳ Rate of  $O_2$  output
- ↳ Rate of  $CO_2$  uptake
- ↳ Rate of carbohydrate production.

↳ Factors affecting rate of photosynthesis

↳ Light

- ↳ Light  $\uparrow$ , rate  $\uparrow$
- ↳ Until a limiting factor becomes in short supply.

↳  $CO_2$  concentration

- ↳  $CO_2 \uparrow$ , rate  $\uparrow$
- ↳ Until a limiting factor becomes in short supply.

↳ Temperature

- ↳ Enzymes control the rate.
- ↳ Temperature controls the enzymes.
- ↳ Temperature  $\uparrow$ , rate  $\uparrow$  until the enzymes get denatured.

Required practical - light intensity and photosynthesis

↳ Chlorophyll

- ↳ Chlorophyll  $\uparrow$ , rate  $\uparrow$

↳ IV - distance light source / light intensity

↳ DV - number of bubbles produced per minute.

↳ CV - concentration of sodium hydrogen carbonate solution ( $CO_2$ ), temperature, same piece of pondweed each time.

