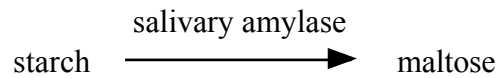


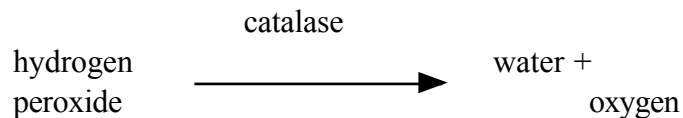
Investigating Cells *Checklist*

Investigating Enzymes (* = Credit outcomes)

1. Enzymes are **non-living, biological catalysts**.
2. Enzymes **speed up chemical reactions** that would otherwise happen too slowly to maintain life.
3. A catalyst takes part in a chemical reaction, speeds up the reaction, but is recovered **unchanged** at the end of the reaction.
4. All cell reactions are **controlled** by enzymes.
- 5.* Enzymes are **specific** in their actions. Each enzyme only acts on **one substrate**.
6. The enzyme **salivary amylase** acts on the substrate **starch** to produce the product **maltose**.

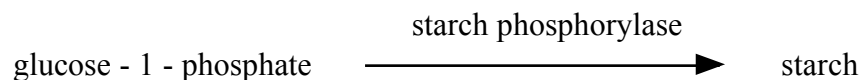


The enzyme **catalase** acts on the substrate **hydrogen peroxide** to produce the products **water and oxygen**.



These examples show enzymes involved in **breakdown reactions**.

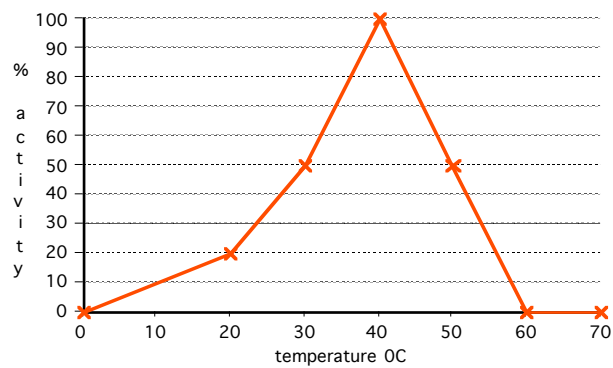
7. The enzyme **starch phosphorylase** (potato phosphorylase) acts on the substrate **glucose - 1 - phosphate** to produce the product **starch**.



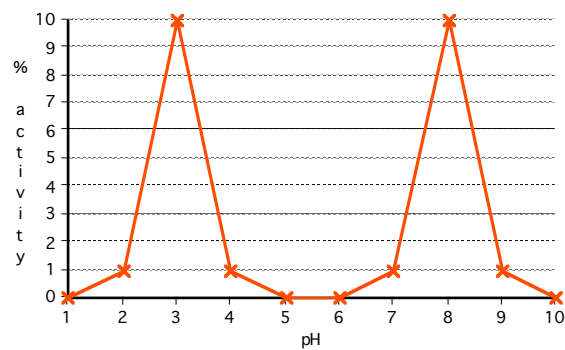
This example shows an enzyme involved in a **synthesis reaction** (a building up reaction).

8. Enzymes are **protein molecules** which can be confirmed by carrying out a food test using **albustix**. The colour change is yellow to green.

9. Enzymes are affected by **temperature**. They work more slowly at low temperatures and faster as the temperature increases but do not work at high temperatures (where they are broken down or denatured- a process termed denaturation). Human enzymes **work best at body temperature (37°C)**.



10. Enzymes are affected by **changes in pH**.
Pepsin works between pH2 and pH4 and **works best at pH3**.
Catalase works between pH7 and pH9 and **works best at pH8**.



pepsin

catalase

- 11.* The conditions under which enzymes work best are the **optimum conditions**.