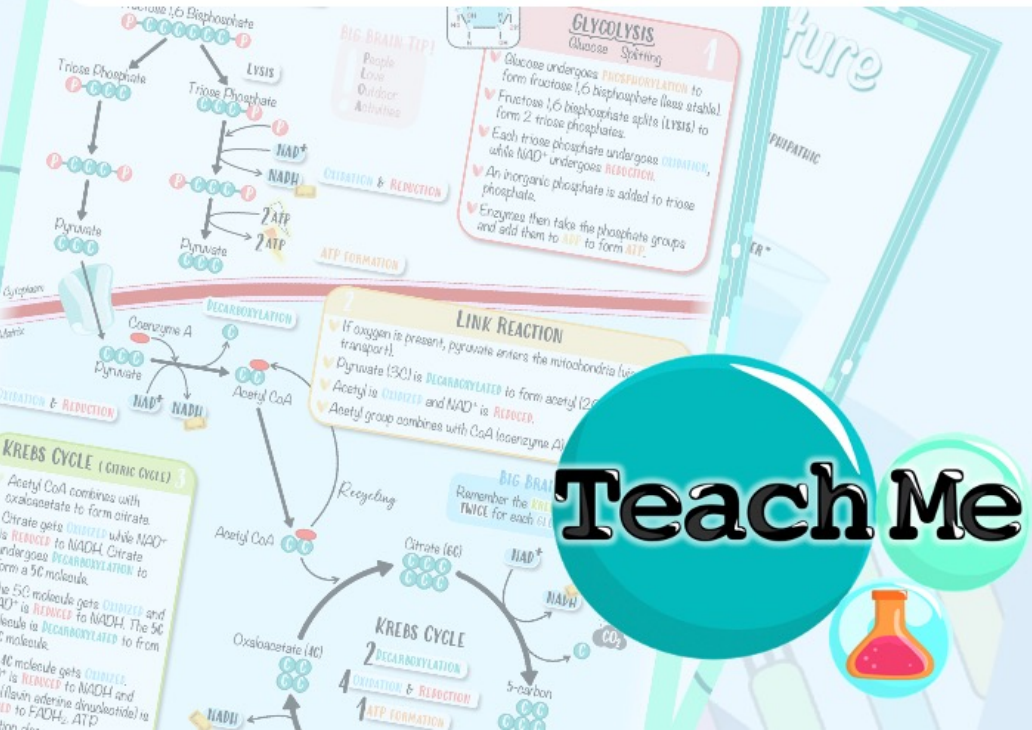
TeachMe

STUDY NOTES

C1.1 Enzymes (HL)



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Enzymes (HL)

Where can we find ENZYMES?

	Intracellular	Extracellular
Location	Occur within a cell (free or attached)	Occur outside a cell (free or attached)
Example	Glycolysis in cytoplasm & Krebs cycle in mitochondria	Chemical digestion in stomach

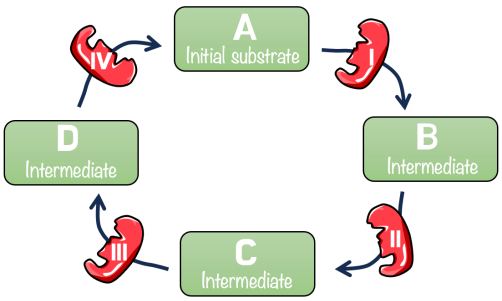
METABOLIC (BIOCHEMICAL) PATHWAYS

1. Linear metabolic pathway

Ex. glycolysis

2. Cyclic metabolic pathway

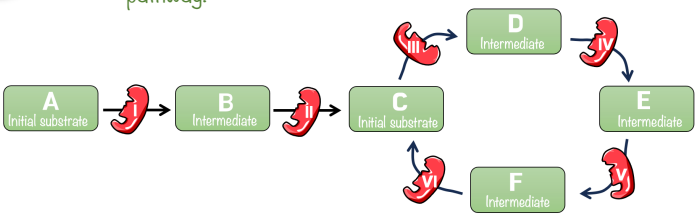
Ex. Krebs cycle (citric acid cycle), Calvin cycle



KEY CONCEPTS

- Different pathways have DIFFERENT lengths.
- Each reaction requires its own UNIQUE ENZYME since enzymes are SPECIFIC.
- Cyclical pathway begins and ends with the SAME substance.
- The final product of one pathway could be the substrate of another pathway.

In this example, C is both the final product in a linear metabolic pathway and the initial substrate in a cyclical metabolic pathway.

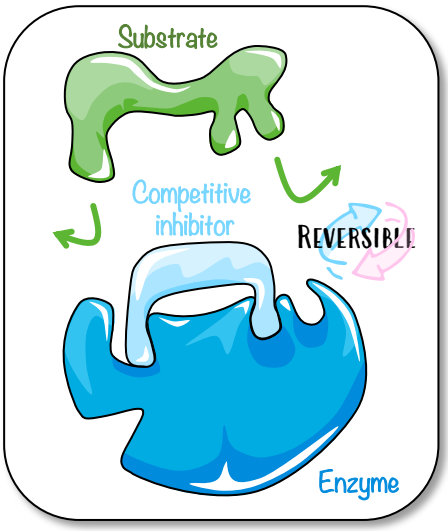


INHIBITOR – Molecule that binds to an enzyme & decreases its activity.

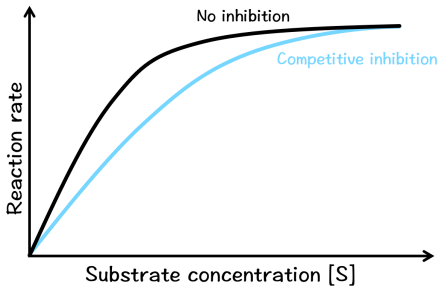
NOTE!

There are 3 types of inhibition:
Competitive inhibition
Non-competitive inhibition
Mechanism-based inhibition

Competitive INHIBITION



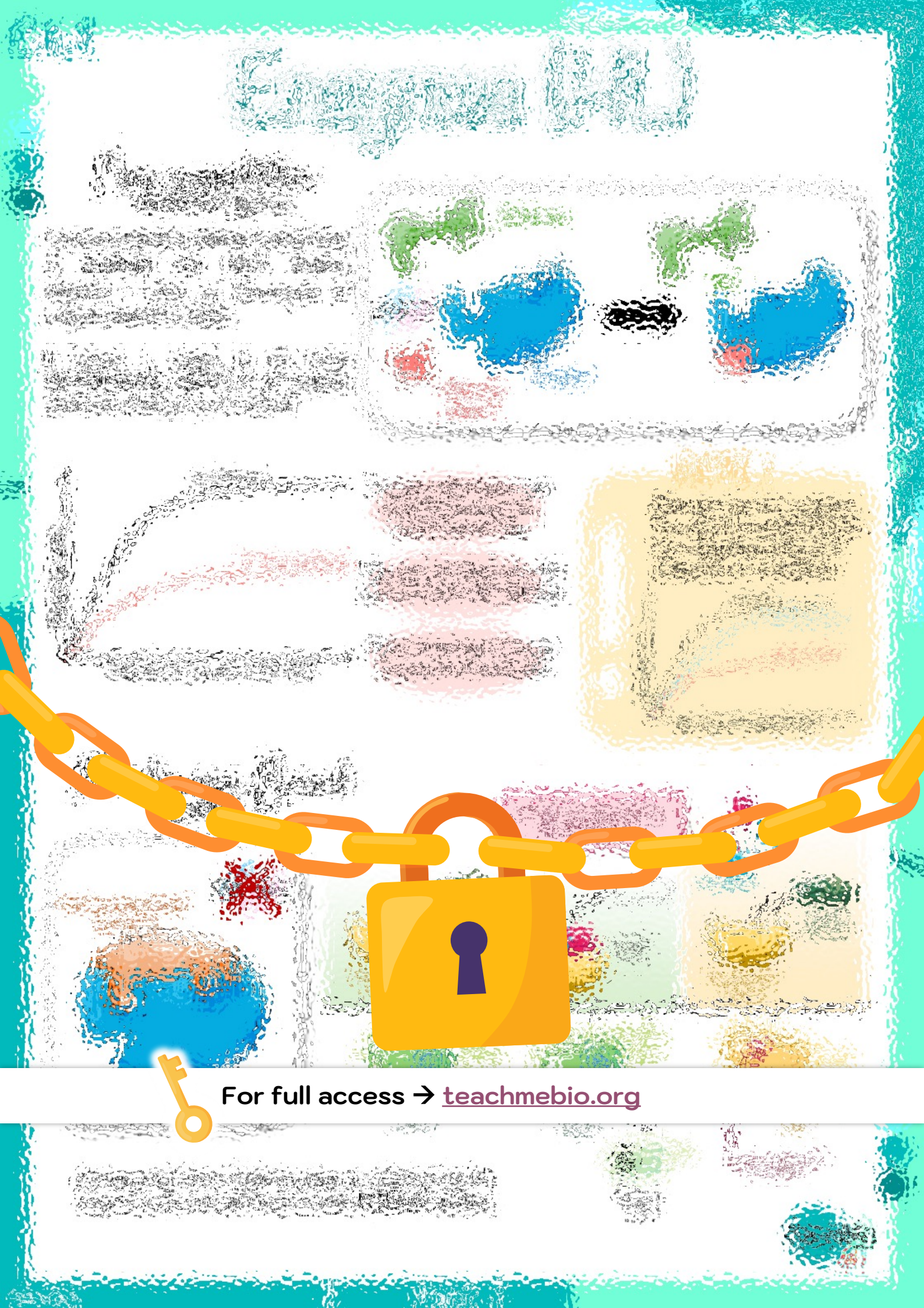
The competitive inhibitor **COMPETES DIRECTLY** with the usual substrate for the active site – it has a **SIMILAR STRUCTURE** to that normal substrate and therefore can **BLOCK THE ACTIVE SITE.**



It causes a decrease in rate of the chemical reaction

It is affected by substrate concentration and can be overcome by increasing the substrate concentration

Example – **STATINS** inhibit production of cholesterol



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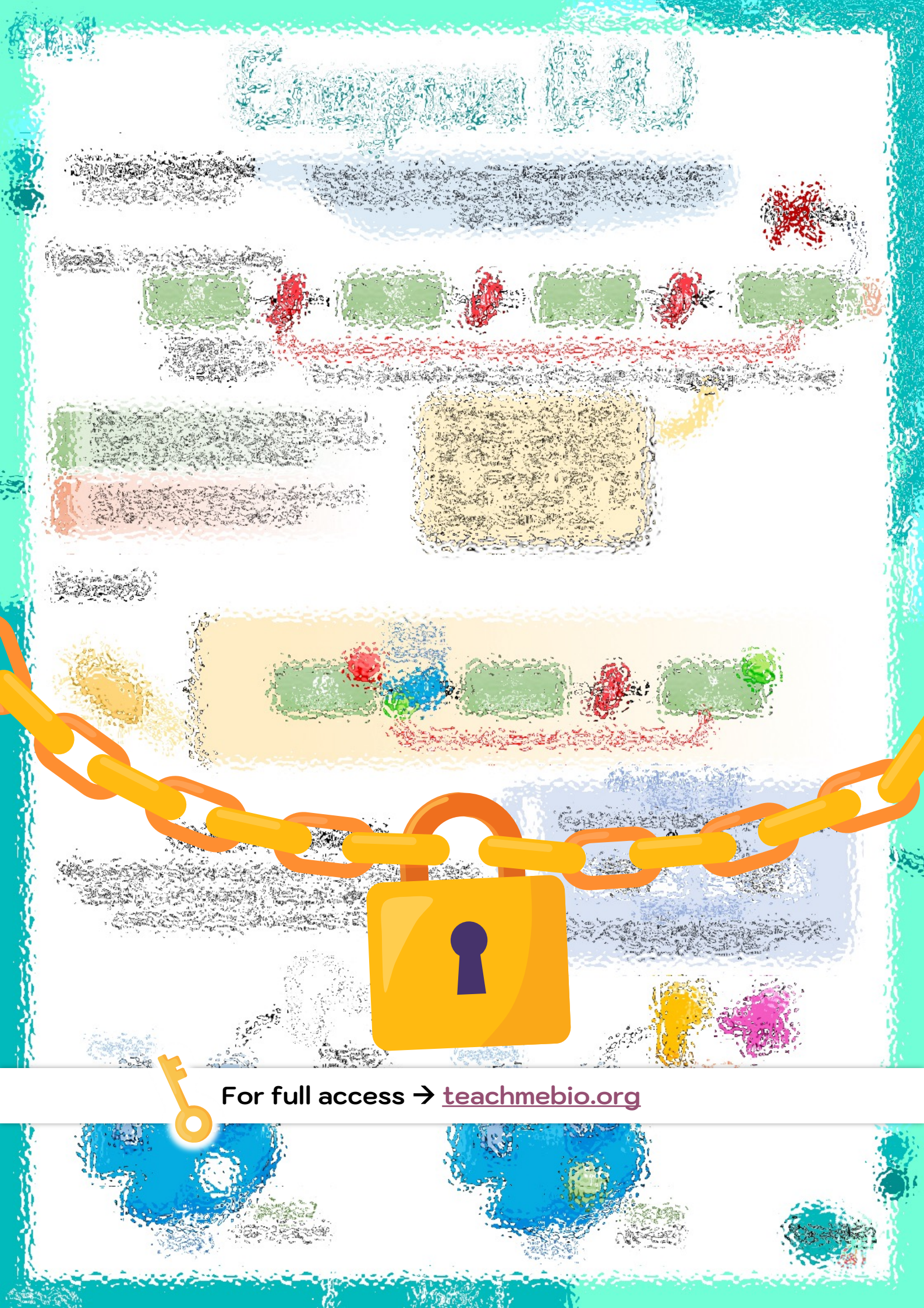

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