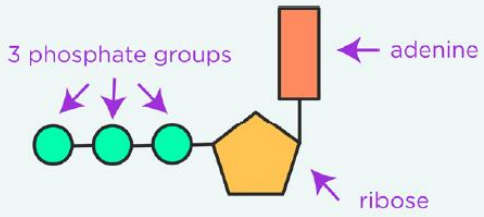
science biology

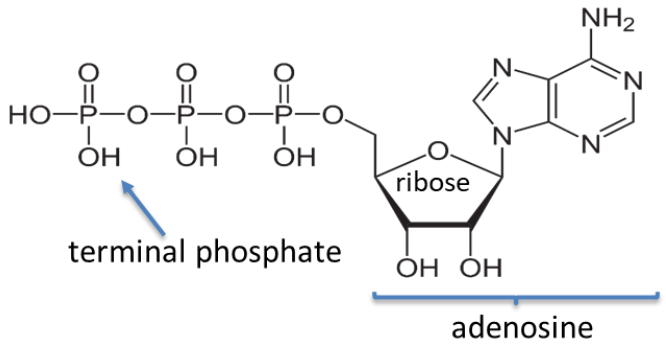
A-Level ATP

ATP – the universal energy carrier and short term energy store in biological systems.

Adenosine triphosphate (ATP) is made up of an adenosine nucleotide (**ribose sugar** and **adenine**) with the addition of **three phosphate groups**.

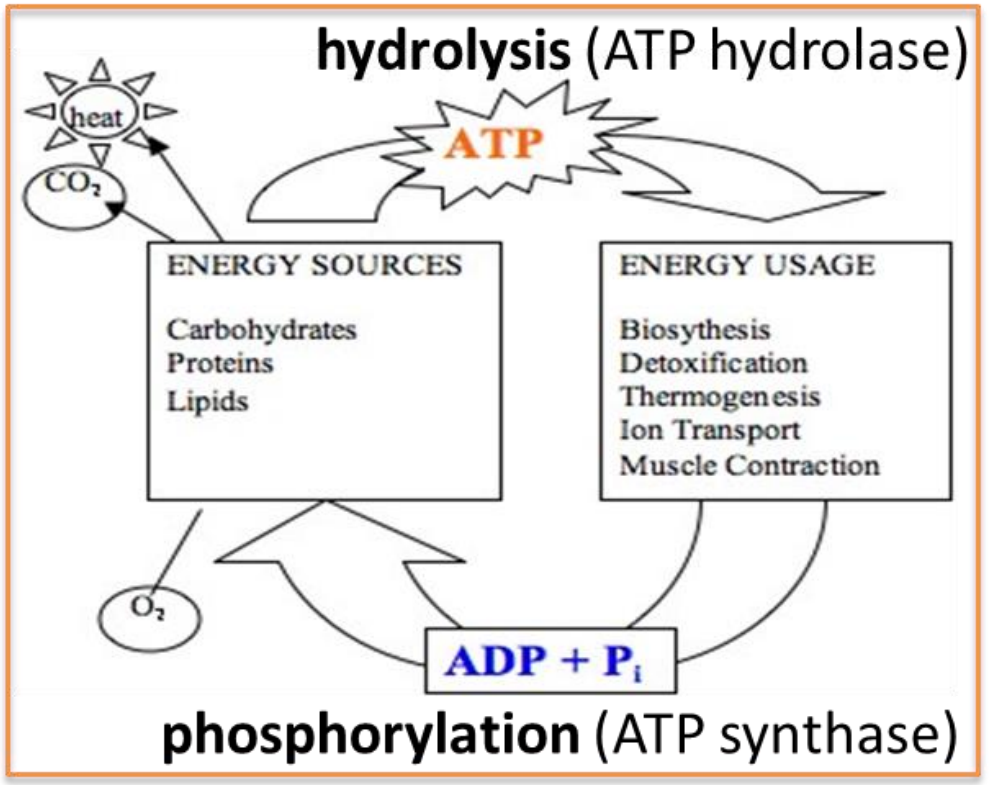
- The structure of ATP is:



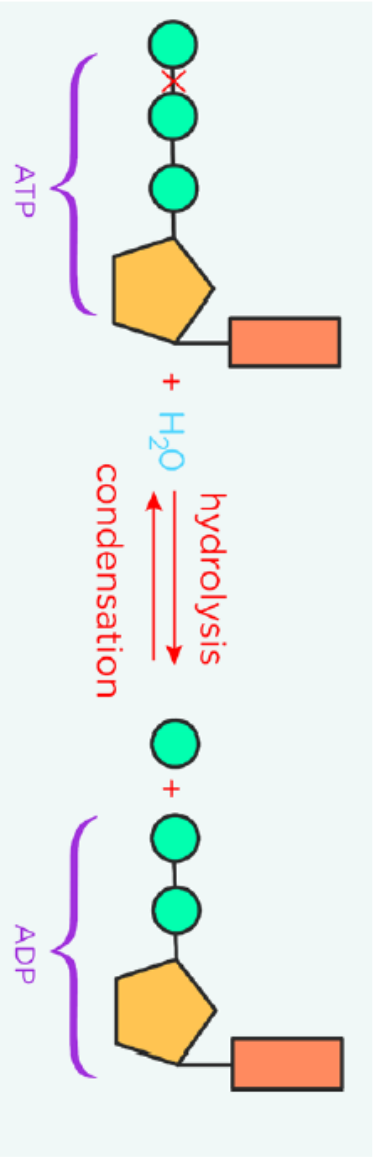


ATP transfers energy within cells for processes such as the synthesis of molecules, cell division and transport of substances.

When ATP is **hydrolysed** to ADP + P_i, the enzyme **ATP hydrolase** removes the **terminal phosphate** group leading to the release of energy. This process is reversed by the **phosphorylation** of ADP by P_i during a **condensation reaction** to form ATP under the direction of **ATP synthase**.



	ATP → ADP	ADP → ATP
Reaction type	Hydrolysis	Condensation
Enzyme involved	ATP hydrolase	ATP synthase
Energy profile of reaction	Releases energy	Requires energy



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