

Why ATP is the energy currency, and what makes it suitable.

Adenosine triphosphate: adenine, ribose and three phosphate groups. Hydrolysis of the terminal phosphate releases energy for cellular work.

PER HYDROLYSIS
~30.5 kJ/mol

STORE?
no, currency

- $\text{ATP} \rightarrow \text{ADP} + \text{P}_i$ releases about 30.5 kJ/mol.
- The amount is small enough to avoid waste and large enough to be useful.
- It is regenerated constantly — a human turns over roughly body weight in ATP daily.
- It is not a long-term store; that is what fats and glycogen are for.
- Made by substrate-level and oxidative phosphorylation, and photophosphorylation.
- Immediate, soluble and universal across life.

LOOK FOR IT

A resting adult regenerates tens of kilograms of ATP a day from a standing pool of only a few grams.

ATP is a currency, not a store: it is spent and regenerated continuously rather than accumulated.