

3 ATP, photosynthesis, and respiration – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
Photosynthesis	光合作用	_____
Cellular respiration	细胞呼吸	_____

Recall

You already know the two great energy processes of life:

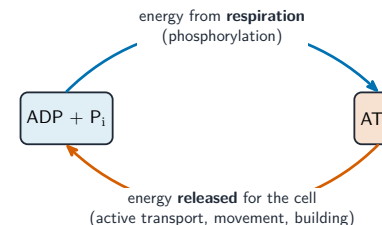
- Plants make food from sunlight – **photosynthesis**.
- All living things release energy from food – **respiration**.
- Your cells need a constant supply of energy to work.

This sheet lines up how cells store and release energy. Each idea has a short worked example.

New ideas

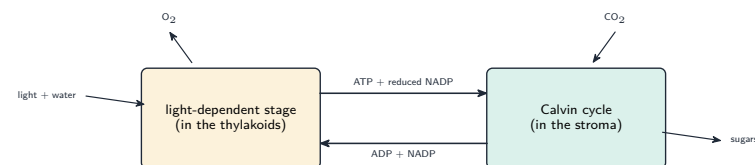
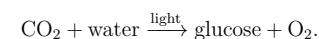
■ 1 ATP – the energy currency

ATP is the molecule cells use to carry energy. Breaking off one of its phosphate groups ($\text{ATP} \rightarrow \text{ADP}$) **releases** energy to power the cell's work; adding it back **stores** energy.



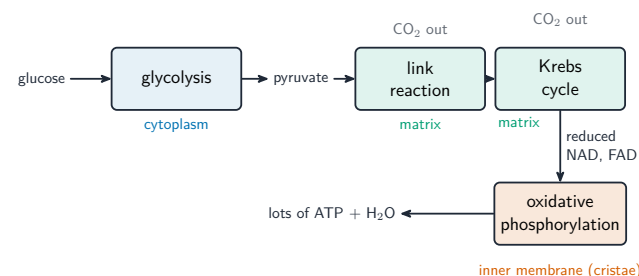
■ 2 Photosynthesis

Photosynthesis 光合作用 captures light energy to build glucose from carbon dioxide and water, releasing oxygen:



■ 3 Cellular respiration

Cellular respiration 细胞呼吸 releases the energy stored in glucose to make ATP, usually using oxygen:



■ 4 Two sides of one coin

Photosynthesis and respiration are **complementary**: the products of one are the reactants of the other. Plants do both; animals only respire.

Watch out: photosynthesis *stores* energy (building glucose) while respiration *releases* it (breaking glucose down). They are opposite processes, not the same thing run twice.

Practice

Try these in order. The methods are all above.

2.1 State what happens to energy when ATP is broken down into ADP. [1]

2.2 Write, in words, the overall equation for photosynthesis. [2]

2.3 Write, in words, the overall equation for aerobic respiration. [2]

2.4 State one way photosynthesis and respiration are opposite processes. [2]

2.5 State which of the two processes an animal cell can carry out. [1]
