

# 12 Aerobic 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) |
|-----------------------|-----------|----------------------------|
| Aerobic               | 有氧        | _____                      |
| glycolysis            | 糖酵解       | _____                      |
| mitochondria          | 线粒体       | _____                      |
| respiratory<br>strate | sub- 呼吸底物 | _____                      |

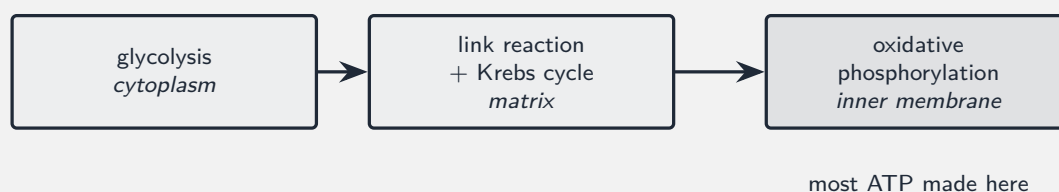
## Recall

**Aerobic** 有氧 respiration (with oxygen) releases a lot of energy from glucose. It happens in four stages, each in a set place in the cell.

## New ideas

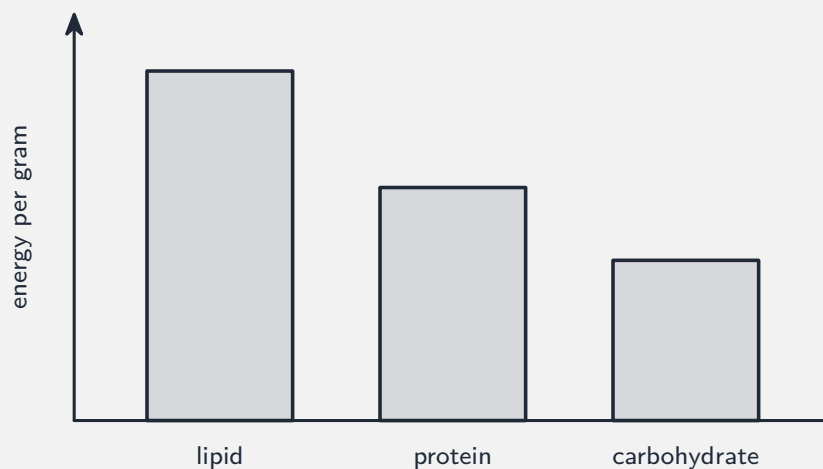
Read these first, then do the Practice.

### ■ 1 The four stages



- **glycolysis** 糖酵解 happens in the cytoplasm;
- the link reaction and Krebs cycle happen in the **mitochondria** 线粒体 matrix;
- oxidative phosphorylation on the inner membrane makes the most ATP.

## ■ 2 Respiratory substrates



A **respiratory substrate** 呼吸底物 is a molecule broken down for energy. Per gram, lipids release the most, then proteins, then carbohydrates.

**Watch out:** each stage has its place —glycolysis in the *cytoplasm*, the link reaction and Krebs cycle in the mitochondrial *matrix*, and oxidative phosphorylation on the *inner membrane* (which makes the most ATP).

## Practice

Try these in order.

12.6 Does *aerobic* respiration use oxygen? [1]

12.7 Where does *glycolysis* happen? [1]

12.8 Which stage makes the most ATP? [1]

12.9 Which respiratory substrate releases the most energy per gram? [1]

12.10 What is a *respiratory substrate*? [1]

**12.11 Challenge.** A muscle cell has very many mitochondria, each with a heavily folded inner membrane. Explain how these features help it make a lot of ATP. [2]

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