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 substrate	呼吸底物	

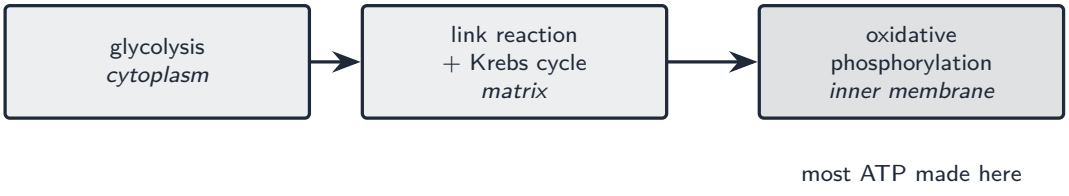
Recall

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

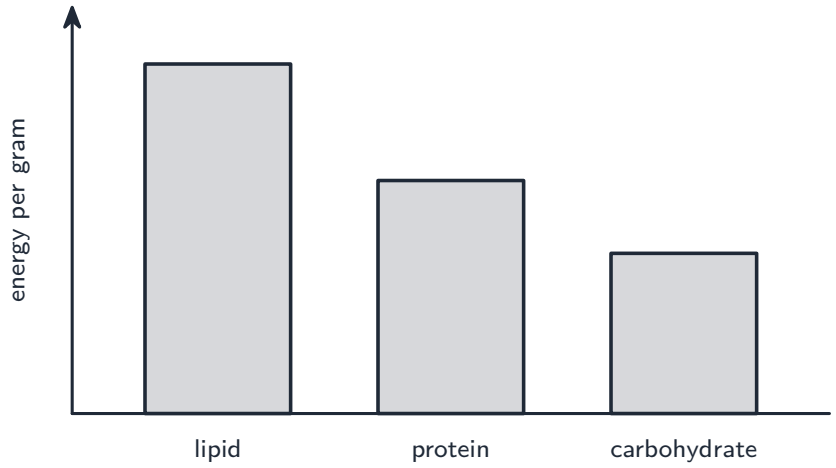
Read these first, then do the Practice.

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]