

13 The chloroplast – Part 1

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	_____
chloroplast	叶绿体	_____
thylakoids	类囊体	_____
stroma	基质	_____
Calvin cycle	卡尔文循环	_____

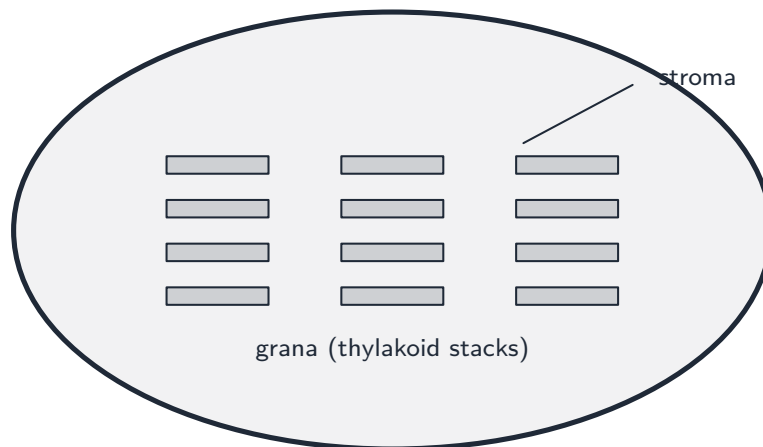
Recall

Photosynthesis 光合作用 — making food from light — happens inside the **chloroplast** 叶绿体. Its structure suits its two stages.

New ideas

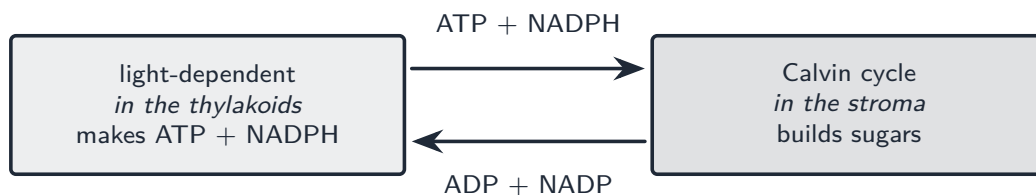
Read these first, then do the Practice.

■ 1 Inside a chloroplast



- flat sacs called **thylakoids** 类囊体 stack into grana — the site of the first stage;
- the fluid around them is the **stroma** 基质 — the site of the second stage.

■ 2 The two stages



- the **light-dependent** stage (in the thylakoids) uses light to make ATP and reduced NADP;
- the **Calvin cycle** 卡尔文循环 (in the stroma) uses these to build sugars from carbon dioxide.

Watch out: the light-dependent stage is in the *thylakoids* (it needs light, makes ATP + reduced NADP); the Calvin cycle is in the *stroma* (it uses those to build sugars from CO₂). Don't swap the locations.

Practice

Try these in order.

13.1 Inside which structure does *photosynthesis* happen? [1]

13.2 What is a stack of *thylakoids* called? [1]

13.3 What is the fluid around the thylakoids called? [1]

13.4 Which stage happens in the thylakoids — light-dependent or the Calvin cycle? [1]

13.5 What does the *Calvin cycle* build, and from what gas? [1]

13.6 Challenge. The Calvin cycle does not directly use light, yet it stops within minutes in the dark. Explain why. [2]
