

19 Copying and sorting DNA – 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)
polymerase chain reaction	聚合酶链式反应	_____
clone	克隆	_____
Gel electrophoresis	凝胶电泳	_____
fragments	片段	_____

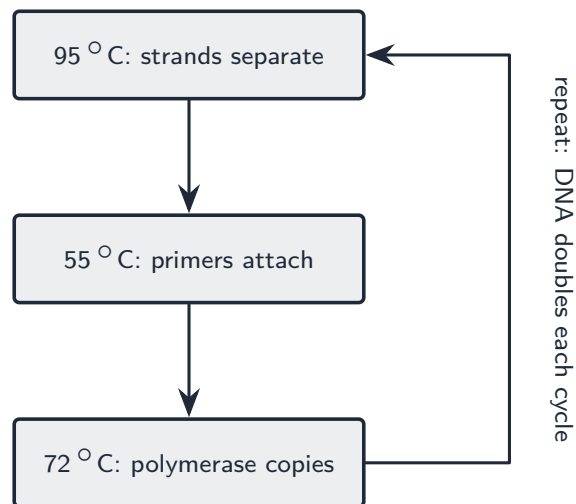
Recall

Once you have a gene, you often need to make millions of copies, and to sort DNA pieces by size.

New ideas

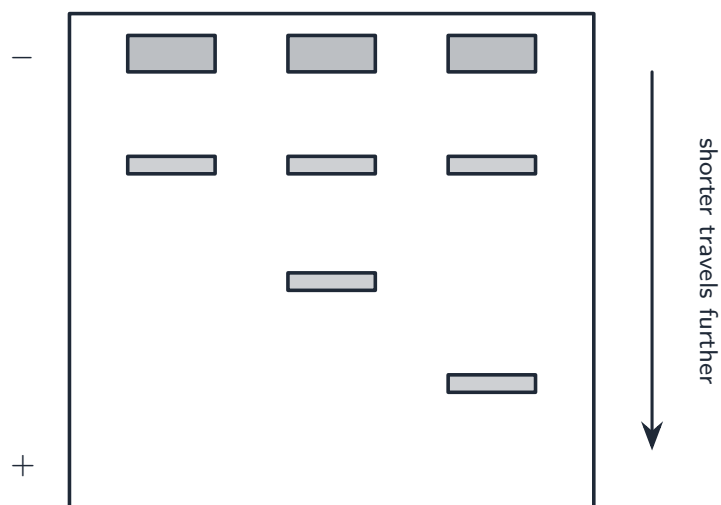
Read these first, then do the Practice.

■ 1 Copying DNA with PCR



The **polymerase chain reaction** 聚合酶链式反应 (PCR) is used to **clone** 克隆 DNA — make millions of copies. It repeats heat-and-cool cycles, doubling the DNA each time.

■ 2 Sorting DNA by size



Gel electrophoresis 凝胶电泳 separates DNA **fragments** 片段 by length: they move through a gel in an electric field, and shorter fragments travel further.

Watch out: PCR *copies* (clones) DNA — the amount *doubles* each cycle. Gel electrophoresis *sorts* fragments by *size*: the DNA moves to the *positive* end (it is negatively charged), and *shorter* fragments travel further.

Practice

Try these in order.

19.6 What is *PCR* used for? [1]

19.7 What happens to the amount of DNA each PCR cycle? [1]

19.8 What does *gel electrophoresis* separate DNA by? [1]

19.9 Towards which end (+ or −) does DNA move in the gel? [1]

19.10 Which fragments travel further — shorter or longer? [1]

19.11 Challenge. In a gel, DNA moves towards the positive electrode and shorter fragments end up further along. Explain both of these observations. [2]
