10 Immunity and vaccination – 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)		
antigens	抗原			
Antibodies	抗体			
lymphocytes	淋巴细胞			
complementary	互补			
phagocytes	吞噬细胞			
vaccine	疫苗			
memory cells	记忆细胞			
active immunity	主动免疫			

Recall

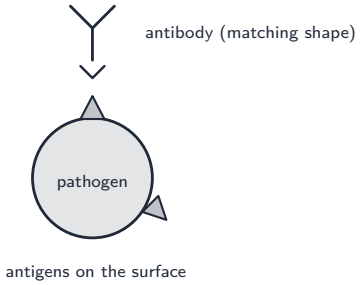
When a pathogen gets inside, special white blood cells fight it. This builds up your immunity.

New ideas

Read these first, then do the Practice.

1 Antigens and antibodies

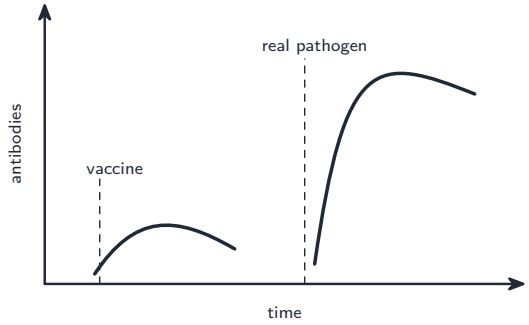
Every pathogen carries **antigens** 抗原 on its surface. **Antibodies** 抗体 (made by **lymphocytes** 淋巴细胞) have a shape **complementary** 互补 to one antigen, so each fits only that pathogen — like an enzyme and its substrate:



When antibodies bind, they destroy the pathogen or mark it for **phagocytes** 吞噬细胞.

2 Vaccination

A **vaccine** 疫苗 puts weakened pathogens (or their antigens) into the body. Your lymphocytes make antibodies and **memory cells** 记忆细胞 that stay for years:



If the real pathogen comes later, the memory cells make antibodies **fast**, so you do not become ill. This is **active immunity** 主动免疫.

Watch out: an **antibody** fits only **one** antigen (like a key in a lock), so it works on just one pathogen. After a vaccine, **memory cells** stay for years and make antibodies *fast* if the real pathogen arrives — that is active immunity.

Practice

Try these in order.

10.6 What is found on the surface of every pathogen? [1]

10.7 Which cells make antibodies? [1]

10.8 Why does an antibody fit only one kind of antigen? [1]

10.9 What do memory cells do if the real pathogen returns? [2]

10.10 What is *active immunity*? [1]

10.11 Challenge. Explain why a person who has been vaccinated against measles does not become ill when they later meet the measles pathogen. [3]