

Pathogens Immune System

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Describe how the trachea and bronchi help to defend the body against pathogens. (2 marks)

Step 1 · Mucus

Cells lining the airways produce sticky mucus that traps pathogens.

Step 2 · Cilia

Tiny hairs (cilia) on other cells beat to move the mucus up to the throat, where it is swallowed.

Answer: Mucus traps pathogens; cilia sweep it away

Check: Swallowed pathogens are then killed by stomach acid.

2. Now try one with the steps

Describe three ways white blood cells defend the body. (3 marks)

Step 1 · Phagocytosis

Step 2 · Antibodies

Step 3 · Antitoxins

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Give two non-specific defences of the human body. [2]

2. Explain how the skin defends the body. [2]

3. Name the acid in the stomach that kills pathogens. [1]

4. What is phagocytosis? [1]

5. What is an antigen? [1]

6. Explain why an antibody against measles does not protect against flu. [2]

7. Describe what a vaccine contains. [1]

8. Explain why people sometimes catch a disease only once. [3]

9. A primary antibody peak is 4 units; the secondary peak is 36 units. How many times larger is the secondary peak? [1]

10. Of 25 000 children, 23 750 received the MMR vaccine. Calculate the percentage vaccinated. [2]

11. Explain why a new flu vaccine is made every year. [2]

12. Explain why smoking increases the risk of chest infections. [2]

13. Explain why the secondary antibody response is faster than the primary response. [3]

14. Evaluate a national programme to vaccinate all children against a disease. [4]

4. Before you hand it in

"Antibodies eat the pathogen."

Antibodies BIND to antigens, clumping pathogens and marking them for destruction. Phagocytes engulf them.

"Vaccines contain antibodies."

Vaccines contain dead or inactive pathogens (antigens). Your lymphocytes then make antibodies and memory cells.

"Antibodies stay in your blood for life."

It is the MEMORY CELLS that last, allowing fast antibody production on re-infection.