What is the Immune Response?

Worksheet

The immune response is a coordinated defense: innate immunity acts first (skin, phagocytes), then adaptive immunity (lymphocytes) learns and creates specific antibodies and memory cells for lasting protection.

Questions

1. Which component of the immune system acts first?

A) Antibodies
B) Innate immunity (phagocytes, complement)
C) Memory cells
D) T killer cells

2. What role do B cells play in adaptive immunity?

A) Directly kill infected cells
B) Produce antibodies against specific pathogens
C) Activate macrophages
D) Cause inflammation

3. Why does fever occur during immune response?

A) Heat kills all bacteria
B) Elevated temperature speeds up immune cell reactions
C) Virus causes damage
D) Antibodies generate heat

4. After vaccination, why do you rarely get the disease?

A) Vaccination kills all pathogens
B) Memory cells quickly recognize and destroy the pathogen
C) Vaccine is permanent cure
D) Innate immunity alone prevents it

5. A cut gets infected with bacteria. What is the innate immune response in the first few hours?

6. You recover from flu once. Why is the second flu infection usually milder?

7. Vaccination vs. actual infection: Why is vaccination safer?

8. Define: What is innate immunity?

9. Define: What is adaptive immunity?

10. Define: What do antibodies do?

Answer Key

1. B) Innate immunity (phagocytes, complement) - Innate immunity (skin, phagocytes, complement) responds within hours; adaptive immunity takes days to weeks.

2. B) Produce antibodies against specific pathogens - B cells produce specific antibodies (immunoglobulins) that bind to and neutralize pathogens.

3. B) Elevated temperature speeds up immune cell reactions - Fever (pyrogens) increases metabolic rate, enhances immune cell function, and slows pathogen replication.

4. B) Memory cells quickly recognize and destroy the pathogen - Memory B and T cells from vaccination respond rapidly to real pathogens, preventing or limiting infection.

5. Skin barrier broken bacteria enter wound Neutrophils arrive (chemotaxis) and engulf bacteria via phagocytosis Lysozyme in tears/saliva breaks down bacterial wall Complement proteins activate, mark pathogens for destruction

6. First flu adaptive immune response creates specific antibodies and memory B/T cells Antibodies recognize viral antigens quickly Memory cells rapidly expand faster viral clearance Symptom duration shorter, severity less

7. Vaccine contains weakened/inactivated pathogen or its antigens Triggers adaptive response WITHOUT dangerous infection Memory cells form as if you'd had the real disease If real pathogen appears, memory cells respond fast no/mild disease

8. Non-specific, rapid defenses present at birth: skin, mucous, phagocytes, complement.

9. Specific, learned immunity via B and T lymphocytes; slower but creates lasting memory.

10. They bind to pathogen antigens, marking them for destruction and neutralizing toxins.