

## AP Biology: Immune System WebQuest

**Go to West One Services Human Biological Science Unit 3B: The Future of Humans: Internal Defences website:**

[http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human\\_bio\\_science\\_3b.zip/content/004\\_internal\\_defence/page\\_01.htm](http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human_bio_science_3b.zip/content/004_internal_defence/page_01.htm)

Use the navigation bar in the left column to click on each topic. Read through the “Introduction,” “The immune system -- three lines of defense” and “First line of defense – nonspecific barriers” and answer questions 1-3.

1. Define pathogen and list 4 types of pathogens.
2. Define antigen and give 3 examples of common antigens.
3. What is the purpose of the first line of defense? Is it general or specific?

**Watch the first 2:40 of the following video “Introduction to how the immune system works” by Great Pacific Media that shows gives an overview of how the body protects itself from microbes and explains how the first and second lines of defense work.**

<http://www.youtube.com/watch?v=IWMJIMzsEMg>

4. What are the body’s three defenses? How do they differ from each other?
5. How do the skin, sweat glands, mucus membranes, and acids in the stomach protect the body? To what level of defense do these belong?
6. What are three nonspecific internal defenses?

**Watch the following podcast about The Inflammatory Response by Johnny Clore.**

NOTE: You need to have YouTube open before clicking on this link at school.

<http://www.youtube.com/watch?feature=fvwp&v=bNN95sA6-8&NR=1>

7. When does the inflammatory response occur? What are three signs of the inflammatory response?
8. What cells release histamine? How does the body respond to the release of histamine?
9. How do platelets play a role in the inflammatory response?

**Watch the Bozeman Science podcast on The Immune System by Mr. Paul Andersen and answer the following questions.**

<http://www.youtube.com/watch?v=z3M0vU3Dv8E>

NOTE: If you had to search for this podcast from YouTube, make sure you open “THE IMMUNE SYSTEM” and not just “IMMUNE SYSTEM.”

10. Describe what a virus, such as small pox, does in a human body.
11. What are 4 ways that skin defends the body from infection? Is this a specific or a nonspecific defense?
12. What is an “antigen”?
13. How was the name “antigen” derived? Carefully draw an antibody and its antigen. Explain how an antibody works to protect the body and explain how the structure of an antibody relates to its function.
14. Explain what it means for a person to have specific immunity to an antigen.

15. What are lymphocytes and what are the two major classes of lymphocytes?
16. In what part of the body are each type created?
17. Explain the humoral response. What causes this type of response? What kinds of cells and chemicals are involved? Explain the functions of each of these cells and chemicals.
18. Explain the cell-mediated response. What causes this type of response? What kinds of cells are involved? Explain the functions of each of these cells.
19. What is the role of a macrophage in the immune response?
20. What specific kind of cell is attacked by HIV? Why is this so damaging to the immune system? Be specific.
21. Give three examples of cell-cell communication in the immune response to an antigen.
22. Explain how a person can be infected by a disease pathogen and not know it.
23. How do viruses and bacteria get around the immune system?

**Next, watch the following animation of The Immune Response from McGraw Hill. Also, do the quiz at the end to check your memory and understanding of the material.**

[http://highered.mcgraw-hill.com/sites/0072507470/student\\_view0/chapter22/animation\\_the\\_im\\_mune\\_response.html](http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter22/animation_the_im_mune_response.html)

24. How does the information given in this animation compare to that of Mr. Anderson's podcast? Explain three specific similarities of the presentations.

25. How does the information given in this animation contrast with that of Mr. Andersen's podcast? Explain three specific differences between the presentations. Note: You may have to watch the two presentations again to answer this completely.

**Now, go to West One Services Human Biological Science Unit 3B: The Future of Humans: Internal Defences website's "Third line of defence - the specific immune response" page that introduces the specific immune response.**

[http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human\\_bio\\_science\\_3b.zip/content/004\\_internal\\_defence/page\\_05.htm](http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human_bio_science_3b.zip/content/004_internal_defence/page_05.htm)

26. Distinguish between self and non-self antigens.

**Go to West One Services Human Biological Science Unit 3B: The Future of Humans: Internal Defences website's "Primary and secondary immunity" page. This web page explains the difference between primary and secondary immune response.**

[http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human\\_bio\\_science\\_3b.zip/content/004\\_internal\\_defence/page\\_09.htm](http://tle.westone.wa.gov.au/content/file/969144ed-0d3b-fa04-2e88-8b23de2a630c/1/human_bio_science_3b.zip/content/004_internal_defence/page_09.htm)

27. Complete the chart:

	Primary Immune Response	Secondary Immune Response
When does this response occur? (first or subsequent infection)		
How long does it take for the body to respond to the antigen?		
What immune cells are involved? How?		
Does the body usually display symptoms of being "sick"?		