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Transforming lives, not just marks

Infectious Diseases

Immunity

Name

Class

Written and edited by Beyond Tutoring.

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That's what we focus on - developing a personal connection with our students, so that we are able to cater for their needs, build their strengths, and develop their weaknesses. We aim to produce well-rounded individuals who can set their sights high and achieve their dreams.

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Outcomes

A student:

› develops and evaluates questions and hypotheses for scientific investigation BIO11/12-1
› designs and evaluates investigations in order to obtain primary and secondary data and information BIO11/12-2
› conducts investigations to collect valid and reliable primary and secondary data and information BIO11/12-3
› selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media BIO11/12-4
› analyses infectious disease in terms of cause, transmission, management and the organism's response, including the human immune system BIO12-14

Content Focus

This module examines the treatment, prevention and control of infectious disease both locally and globally. It includes study of the human immune system and its response to an infectious disease.

The value of studying infectious disease and its causes and effects is highlighted by the cost to humans in terms of losses in productivity and production and the impact on overall health. The module also considers medical and agricultural applications that draw on the work of a variety of scientists.

Content

Inquiry question: How does the human immune system respond to exposure to a pathogen?

Students:

- investigate and model the innate and adaptive immune systems in the human body (ACSBL119)
- explain how the immune system responds after primary exposure to a pathogen, including innate and acquired immunity

Question 1

Outline the key components of the innate immune system.

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Question 2

From the following, which is the earliest step that takes place during a host response?

a) Antibody production
b) Production of B cells and T cells
c) Inflammatory response
d) Host recognition of foreign antigen

Question 3

Complete the following table to list and describe each component of the immune system. In your answers, include their role in the immune response.

B cells	
T cells	
Antibodies	
Antigens	
Macrophages	
Phagocytosis	

Inflammation	

Question 4

Distinguish between macrophages and neutrophils.

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Question 5

Identify the different types of T cells and describe their functions in the immune response.

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Question 6

John and Michael are two friends that got bitten by the same mosquito. 3 days later John developed virus-like symptoms whereas Michael didn't.

Explain two possible reasons as to why John developed the symptoms and Michael didn't?

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Question 7

a. What molecules do plasma B cells produce?

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b. How do these molecules aid the immune response?

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Question 8

When a macrophage detects a bacterial pathogen, it engulfs it through the process of phagocytosis.

Outline the steps of phagocytosis. Include a diagram in your response.

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Question 9

What is the adaptive immune response?

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Outline what clonal selection is and establish its importance within the adaptive immune response.

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Question 10

Explain the process of apoptosis and how does that ain in providing non-specific immunity.

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Question 11

Patients that have undergone organ transplant surgery must take immunosuppressant medications. Why is this important?

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Question 12

Compare and contrast the innate and adaptive immune response. Use a table in your response.

Question 13

Outline the role of the lymphatic system and describe the structures that comprise this system.

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Question 14

A person's antibody production is different following a primary exposure compared to secondary exposure. Plot a graph illustrating this phenomenon below.