

Assessment Immunology

January 27, 2011

Name:

Student number:

Instructions:

The assessment consists of 10 separate questions.

Please put your name on each page and any additional page that you may need.

Answer each question on the separate page on which the question is printed.

Write clearly!

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1. The activation of the 3 complement pathways involves the use of different components.

Yet all three pathways converge to a process called complement fixation.

A) What component is the crucial element in this fixation in all three pathways?

B) Describe shortly the three effector mechanisms that result from complement fixation.

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2.

A) What cell types express Toll like receptors?

B) Explain why a relative limited set of receptors is able to recognize many different types of microbes.

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3. Discuss how T-cell receptors differ from immunoglobulins in the way that they recognize antigen. Use the following terms in your answer: peptides, antigen presenting cells, MHC molecules, antigen-binding sites.

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4. At a site of bacterial infection neutrophilic granulocytes are the first cells to enter from the blood.

How is it possible that these cells can sense the inflammatory processes occurring in the tissue?

Describe the requirements necessary for a cell to leave the bloodstream and enter a site of inflammation.

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5. P and N nucleotides are formed during the recombination processes that are involved in the generation of the variable regions of immunoglobulin molecules.

What are P and N nucleotides?

How do they contribute to the generation of diversity?

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- 6.
- A) Give two functional differences between immature and mature dendritic cells.
- B) Discuss why you think these functional changes should occur.

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7. What is allelic polymorphism of MHC molecules?

How does this phenomenon influence the capacity of a person's T cells to recognize antigens.

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- A) What is isotype switching?
- B) What is the advantage of isotype switching?
- C) Give three examples of different isotypes and describe shortly how they differ from each other.

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9. IgE mediated allergic reactions are characterized by an early and late phase response.

- A) Explain the immediate acute nature of the reaction that is associated with the early response.
- B) What is the basis for the late-phase response?

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10.

- A) What are the two requirements for a naïve T-cell to become activated?
- B) Upon activation, the T-cells will start to divide. Which of the following molecules are required for T-cell division and explain shortly why:
 - ITAM
 - Ig α
 - Fc γ RII β
 - CTLA-4
 - Interleukin 2 receptor- α