

Unit Three Homework Assignment
Chapter 21 - Immune System (Part A)

Cell Dependent Antigens (1 min)

1. What type of cells may have foreign antigens?
2. What type of cell may process the foreign antigen?
3. What type of molecule is used to display a portion of the antigen on the outer surface of the macrophage?
4. What type of cell is able to recognize MHCP II? Why?
5. What is one function of the activated helper T cell? End result?

Antigen Presenting Cell (1:30 min)

1. What do B cells need to be able to form plasma cells, antibodies, and memory B cells?
2. What is the function of an antigen Presenting Cell (APC)?
3. Are B cells APC? Explain
4. What type of MHCP do B cells have?
5. What must happen in order for the B cell to morph into a plasma cell?
6. What type of molecule is secreted by helper T cells after it binds to the B cell's MHCP?

Antigen Processing (1:44 min)

1. How are foreign antigen processed inside a cell? What host cell organelles are used to process the antigen?
2. What type of MHCP is used by the host cell?
3. What type of "activated" cell is able to bind to the host cell MHCP?
4. How are bacteria's antigen processed if they are located outside the host cell?
5. What class MHCP molecule is used in this mechanism?

Antigenic Determinants (48 sec)

1. What type of molecules make good antigens? Small or large?
2. What is an epitope?
3. Do bacteria have only one antigen on their surface? Significance?

Activation of the Immune Response (2 min)

1. What do we call a macrophage when it projects antigen on its surface?
2. What type of receptor must a helper T cell have to dock onto the macrophage?
3. What happens when a MHCP II and helper T cell receptor combine?
4. What cell produces interleukin I? Significance?
5. What cell produces interleukin II? Significance?
6. What occurs after interleukin II is secreted? What two cell type undergo mitosis? How many types of receptors will these cells have?
7. What is the function of cytotoxic T cells? How do they kill infected host cells?
8. After a stimulated helper T cell binds to a B cell, what happens?
9. What do antibodies do?
10. Do all B cells form plasma cells? Explain. Significance?
11. What is the difference between first and second exposure to a foreign antigen? Why?

Clonal Selection (2:26 min)

1. How many antibody type may a single B cell produce?
2. After a B cell makes an antibody, where is it displayed? Then functions as what?
3. What happens to a B cell after it is activated?
4. What two cell lines do B cells become? Significance of each?
5. What must happen in order for the B cell to become a plasma cell? (two step process)

Natural Killer Cells (3 min)

1. How are NKC described?
2. What type of host cells are targeted by NKC?
3. How do NKC kill infected host cells?
4. What type of cell death results by the action of NKC?

Adaptive Immunity by Howard Hughes Medical Institute (10 min)

(Please Note: this assignment has both static slides and videos. Question are included for the embedded videos)

1. What WBC are part of the innate immune system?
2. What WBC are part of the adaptive immune system?
3. What WBC participate in both immune systems?
4. What is different between vertebrates and other animals?
5. What are the four key immune cells of adaptive immunity?
6. What is the difference in function of the helper and cytotoxic T cells?
7. How many different kinds of antibodies are made by the human immune system?
8. What type of immune cell is found in the epidermis? Function? Go to where? Why?
9. What do antigen presenting cells do?
10. What are T cell receptors? How many different type of antigen may a T cell receptor dock to? Significance?
11. What do helper T cells have that make these cells vulnerable to AIDS?
12. If you lose helper T cells are you able to activate cytotoxic and B cells?
13. What do proteasomes do?
14. What occurs in the endoplasmic reticulum?
15. What two molecules secreted by the cT-cell kill the infected cell?