

Unit Three Homework Assignment (Part B)

Chapter 21 - Immune System

The Inflammatory Response (1:53 min)

1. What type of response is inflammation?
2. What starts the inflammation? What is released? Causes what?
3. What is selectin?
4. What are integrin receptors? Location?
5. What is margination?
6. What role do mast cells play in this mechanism?
7. What is extravasation (diapedesis)?

Complement Functions (1:35 min)

1. What four events are mediated by complement?
2. What is the membrane attack complex? Function?
3. The antibodies that agglutinate RBC activate complement? Significance?

Activation of Complement (2:56 min)

1. Where are complement proteins found?
2. What is the classical activation pathway? (Started by what?)
3. What type of molecule starts the alternative activation pathway?
4. What is the significance of C3a? Causes what?
5. What is the significance of C3b? Causes what two events?

Antibodies (1 min)

1. What type of macromolecule is an antibody?
2. What two things do antibodies do? (the phrase I use in class?)
3. How many types of antigens may an antibody bind to?
4. What is clonal selection? Net result?

Antibody Diversity (1:59 min)

1. It is estimated that we may have in excess of a billion different types of antibodies. Do we have enough DNA to code for this many proteins?
2. How do B cells code for so many antibodies? (give very general answer here)

IgE Hypersensitivity - Type I (1:41 min)

1. What type of objects may cause a hypersensitivity reaction? How does this happen?
2. After the foreign antigen is "presented", what type of cell has specific receptors to bind to the surface protein?
3. What type of cell is in high concentration under the mucous membrane?
4. What type of cell is stimulated to make IgE antibodies?
5. What type of cell do the newly formed IgE antibodies attach themselves to?
6. If the same antigen now reenters the body, what will happen if the antigen binds to the IgE antigen that now functions as a receptor?
7. What reactions occur?
8. What is this called?

Cytotoxic Hypersensitivity - Type II (2 min)

1. What type of interaction occurs in Type II hypersensitivity? (Between what in this example)
2. What follows the initial interaction? What is the name of these proteins?
3. What term is used meaning the cell breaks apart?
4. What type of blood type is the universal donor?
5. What type of blood type is the universal recipient?

Immune Complex - Type III Hypersensitivity (46 sec)

1. What are immune complexes?
2. What happens to large size immune complexes?
3. What happens to intermediate size complexes?
3. What plasma protein will be activated by this complex?
4. What blood cell will degranulate because complement was activated? Causes what to happen next to blood vessel?
5. What other WBC is attracted to the immune complex? What do these cells do? Net result?

Delayed Hypersensitivity - Type IV (1:47 min)

1. What type of cell is responsible for delayed hypersensitivity?
2. What are two examples that result from this type of hypersensitivity?
3. What is another term used to describe the antigen?
4. Small molecules do not stimulate an immune response. What do we call a small molecule that binds to a larger molecule and then may cause an immune response?
5. After a macrophage engulfs "this complex", and presents the epitope on its membrane, what type of T cell will be activated? Causing what to happen?
6. What happens later if there is a second exposure to the same small antigen? (Two things?) Damage caused?
7. When do the first skin lesions appear? Last for how long?

Vaccinations (34 sec)

1. What is the process used to stimulate an immune response?
2. Why don't the antigens cause a disease?
3. What is the goal for a vaccination?

How Chicken Eggs Are Used to Make Flu Vaccine (2 min)

1. How long have eggs been used to make flu vaccines?
2. How much of the flu vaccine is produced using fertilized hen eggs?
3. What are the eggs inoculated with? Why?
4. What strains of virus are recommended each year to be in the annual flu vaccine? Who recommends the strains to be used?

mRNA Vaccinations (3 min)

1. How do vaccines usually work? Will the injected antigen make you sick? Explain
2. How may we "skip" the way vaccines usually work? Explain
3. What does mRNA stand for? Function?
4. What happened in 2005?
5. What type of diseases may be cured using this new mRNA vaccination procedure?