13.6: Diseases of the Immune System (Exercises)

19.1: Hypersensitivities

Multiple Choice

Which of the following is the type of cell largely responsible for type I hypersensitivity responses?

A. erythrocyte
B. mast cell
C. T lymphocyte
D. antibody

B

Type I hypersensitivities require which of the following initial priming events to occur?

A. sensitization
B. secondary immune response
C. cellular trauma
D. degranulation
A

Which of the following are the main mediators/initiators of type II hypersensitivity reactions?

A. antibodies  
B. mast cells  
C. erythrocytes  
D. histamines

A

Inflammatory molecules are released by mast cells in type I hypersensitivities; type II hypersensitivities, however, are characterized by which of the following?

A. cell lysis (cytotoxicity)  
B. strong antibody reactions against antigens  
C. leukotriene release upon stimulation  
D. localized tissue reactions, such as hives

A

An immune complex is an aggregate of which of the following?

A. antibody molecules  
B. antigen molecules  
C. antibody and antigen molecules  
D. histamine molecules

C

Which of the following is a common treatment for type III hypersensitivity reactions?

A. anti-inflammatory steroid treatments  
B. antihistamine treatments  
C. hyposensitization injections of allergens  
D. RhoGAM injections
Which of the following induces a type III hypersensitivity?

A. release of inflammatory molecules from mast cells
B. accumulation of immune complexes in tissues and small blood vessels
C. destruction of cells bound by antigens
D. destruction of cells bound by antibodies

B

Which one of the following is not an example of a type IV hypersensitivity?

A. latex allergy
B. Contact dermatitis (e.g., contact with poison ivy)
C. a positive tuberculin skin test
D. hemolytic disease of the newborn

D

Fill in the Blank

Antibodies involved in type I hypersensitivities are of the ________ class.

IgE

Allergy shots work by shifting antibody responses to produce ________ antibodies.

IgG

A person who is blood type A would have IgM hemagglutinin antibodies against type ________ red blood cells in their plasma.

B

The itchy and blistering rash that develops with contact to poison ivy is caused by a type ________ hypersensitivity reaction.
Short Answer

Although both type I and type II hypersensitivities involve antibodies as immune effectors, different mechanisms are involved with these different hypersensitivities. Differentiate the two.

What types of antibodies are most common in type III hypersensitivities, and why?

Critical Thinking

Patients are frequently given instructions to avoid allergy medications for a period of time prior to allergy testing. Why would this be important?

In some areas of the world, a tuberculosis vaccine known as bacillus Calmette-Guérin (BCG) is used. It is not used in the United States. Every person who has received this vaccine and mounted a protective response will have a positive reaction in a tuberculin skin test. Why? What does this mean for the usefulness of this skin test in those countries where this vaccine is used?

19.2: Autoimmune Disorders

Multiple Choice

Which of the following is an example of an organ-specific autoimmune disease?

A. rheumatoid arthritis  
B. psoriasis  
C. Addison disease  
D. myasthenia gravis

C

Which of the following is an example of a systemic autoimmune disease?

A. Hashimoto thyroiditis  
B. type I diabetes mellitus  
C. Graves disease  
D. myasthenia gravis
**Fill in the Blank**

The thyroid-stimulating immunoglobulin that acts like thyroid-stimulating hormone and causes Graves disease is an antibody to the ________.

thyroid-stimulating hormone receptor

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**19.3: Organ Transplantation and Rejection**

**Matching**

Match the graft with its description.

___autograft A. donor is a different species than the recipient

___allograft B. donor and recipient are the same individual

___xenograft C. donor is an identical twin of the recipient

___isograft D. donor is the same species as the recipient, but genetically different

B, D, A, C

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**Fill in the Blank**

For a transplant to have the best chances of avoiding rejection, the genes coding for the ________ molecules should be closely matched between donor and recipient.

MHC

Because it is a "transplant" that can include APCs and T cells from the donor, a bone marrow transplant may induce a very specific type of rejection known as ________ disease.
Short Answer

Why is a parent usually a better match for transplanted tissue to a donor than a random individual of the same species?

19.4: Immunodeficiency

Multiple Choice

Which of the following is a genetic disease that results in lack of production of antibodies?

A. agammaglobulinemia  
B. myasthenia gravis  
C. HIV/AIDS  
D. chronic granulomatous disease

A

Which of the following is a genetic disease that results in almost no adaptive immunity due to lack of B and/or T cells?

A. agammaglobulinemia  
B. severe combined immunodeficiency  
C. HIV/AIDS  
D. chronic granulomatous disease

B

All but which one of the following are examples of secondary immunodeficiencies?

A. HIV/AIDS  
B. malnutrition  
C. chronic granulomatous disease  
D. immunosuppression due to measles infection

C
Fill in the Blank

Diseases due to ________ abnormalities are termed primary immunodeficiencies.

[ ] genetic

A secondary immunodeficiency is ________, rather than genetic.

[ ] acquired

19.5: Cancer Immunobiology and Immunotherapy

Multiple Choice

Cancer results when a mutation leads to which of the following?

A. cell death
B. apoptosis
C. loss of cell-cycle control
D. shutdown of the cell cycle

[ ] C

Tumor antigens are ________ that are inappropriately expressed and found on abnormal cells.

A. self antigens
B. foreign antigens
C. antibodies
D. T-cell receptors

[ ] A

Fill in the Blank

A ________ cancer vaccine is one that stops the disease from occurring in the first place.
preventive

A _______ cancer vaccine is one that will help to treat the disease after it has occurred.

therapeutic

Short Answer

How can tumor antigens be effectively targeted without inducing an autoimmune (anti-self) response?