

Which of the following conveys the longest-lasting immunity to an infectious agent?

- a. None of the above
- b. Both (a) and (b)
- c. Active immunity
- d. Passive immunity

A 65-year-old woman receives an influenza vaccine. Two weeks later, she develops high levels of specific antibodies against the flu virus. Which cell type was directly responsible for producing these antibodies?

- a. Dendritic cells
- b. T cells
- c. Macrophages
- d. B cells

The basic structure of antibodies are _____

- a. Linear
- b. Hyperbolic
- c. Y-shaped
- d. X-shaped

Which of the following best describes the role of regulatory T cells (Tregs)?

- a. They enhance the immune response.
- b. They suppress the immune response to maintain tolerance.
- c. They directly kill infected cells.
- d. They are involved in allergic reactions

Name the molecule which constitutively expressed on the dendritic cell?

- a. Class II MHC
- b. APC
- c. Antigen
- d. Class I MHC

Which cytokine is crucial for the differentiation of naive T cells into Th17 cells?

- a. IL-2
- b. IL-12
- c. IL-23
- d. IL-4

Name the class of MHC which is recognized by CD4 TH cell.

- a. MHC I
- b. MHC III
- c. MHC cannot recognize T cells
- d. MHC II

What receptor is present on the surface of all naïve B cells

- a. IgM and IgD
- b. IgG and IgE
- c. IgM and IgG
- d. IgG and IgD
- e. IgM and IgA

Name the heavy chain of immunoglobulin G.

- a. α
- b. μ
- c. γ
- d. ϵ

Individuals unable to make the J protein found in certain immunoglobulins would be expected to have frequent infections of the

- a. blood.
- b. pancreas.
- c. liver.
- d. brain.

A 30-year-old woman with a bacterial infection shows an increased number of macrophages at the site of infection. Which cytokine is most likely responsible for this recruitment?

- a. Interleukin-10 (IL-10)
- b. Tumour necrosis factor-alpha (TNF- α)
- c. Interleukin-4 (IL-4)
- d. Interferon-gamma (IFN- γ)

The ability of an organism to resist infections by the pathogens is called _____

- a. Immunity
- b. Hypersensitivity
- c. Allergy
- d. Infection

A researcher uses flow cytometry to analyse a patient's immune cells. Which of the following can be measured with this technique?

- a. Antibody levels in the blood
- b. Cytokine secretion profiles
- c. Surface markers on individual immune cells
- d. Gene expression in T cells

Which immunoglobulin can pass through placenta?

- a. IgD
- b. IgG
- c. IgE
- d. IgM

Which of the following is NOT a function of antibodies?

- a. Activating complement
- b. Directly killing pathogens
- c. Opsonization
- d. Neutralizing toxins

Examples of primary mediators released by Mast cells would be

- a. Prostaglandin D2
- b. Platelet activating factor
- c. leukotrienes
- d. cytokines
- e. heparin

Cells Involved In Innate Immunity are_____.

- a. Phagocytes
- b. All of the above
- c. Macrophages
- d. Natural Killer Cells

The common disorders caused by a poor immune system include _____

- a. Deficiency diseases
- b. Epidemic Diseases
- c. Autoimmune diseases
- d. None of the above

patient with systemic lupus erythematosus (SLE) is at risk for which type of hypersensitivity reaction?

- a. Type I
- b. Type IV
- c. Type III
- d. Type II

The percentage of human peripheral blood T-cells bearing a gamma delta T-cell receptor is:

- a. 100%.
- b. Only present during mycobacterial infections.
- c. 30–80%.
- d. 1-5%.
- e. 0%.

A patient's serum is tested for autoantibodies using indirect immunofluorescence. The principle of this technique is based on:

- a. Antigen-antibody binding
- b. T cell proliferation
- c. RNA hybridization
- d. Complement activation

A patient with a congenital absence of the thymus gland (DiGeorge syndrome) would have which of the following immunological deficiencies?

- a. Lack of complement proteins
- b. Lack of mature B cells
- c. Lack of mature T cells
- d. Lack of neutrophils

Where does the acquired immune response begin for circulating antigens?

- a. Mucosa-associated lymphoid tissues
- b. Langerhans dendritic cells
- c. Regional lymph nodes
- d. The spleen

Tolerance of self-antigen by B-cells are known as B-cell tolerance.

- a. False
- b. True

Which of the following compounds is NOT found in tears?

- a. Lactoferrin
- b. IgE
- c. IgA
- d. Lysozyme

Which immunoglobulin is the principal one found in secretions such as milk?

- a. IgE
- b. IgA
- c. IgD
- d. IgM
- e. IgG

B lymphocytes

- a. have a receptor for CMV virus
- b. are the most common circulating lymphocyte
- c. are integral to the cell mediated system of immunity
- d. are activated independently of T helper cells
- e. may be activated by protein and non-protein antigens

Which of the following is an example of a pentameric antibody?

- a. IgG
- b. IgA
- c. IgM
- d. IgE

C3b:

- a. Is the inactive form of C3.
- b. Directly injures bacteria.
- c. Is an anaphylatoxin.
- d. Opsonizes bacteria.
- e. Is chemotactic.

A patient with HIV infection is found to have a low CD4+ T cell count. This predisposes the patient to infections because:

- a. CD4+ T cells are essential for antibody production.
- b. CD4+ T cells help coordinate the immune response.
- c. CD4+ T cells activate the complement system.
- d. CD4+ T cells directly kill infected cells

Which of these are non-professional antigen presenting cells?

- a. Fibroblast
- b. Macrophages
- c. B lymphocytes
- d. Dendritic cells

Name the cell which receives antigen presented by MHC molecule.

- a. Nk cells
- b. T-cells
- c. Macrophages
- d. B-cells

A 25-year-old man is diagnosed with an immunodeficiency that affects the function of IgA. Which of the following is he most susceptible to?

- a. Bloodborne infections
- b. Skin infections
- c. Respiratory infections
- d. Parasitic infections

One principal function of complement is to

- a. mediate the release of histamine
- b. cross link allergens
- c. Bind antibodies attached to cell surfaces and to lyse these cells
- d. inactivate perforins
- e. phagocytize antigens

Name the nerve stimulator which is responsible for the pain of the inflammation.

- a. Prostaglandin
- b. Kinins
- c. Histamines
- d. Bradikinin

A polymorphonuclear neutrophil (PMN):

- a. Is a bone marrow stem cell.
- b. Is closely similar to a mast cell.
- c. Has granules which stain with eosin.
- d. Contains microbicidal cytoplasmic granules.
- e. Is not a professional phagocytic cell

The primary function of macrophages in the immune response is to:

- a. Present antigens to T cells
- b. Secrete histamines
- c. Produce antibodies
- d. Activate the complement system

Mark the correct role of cytotoxic T-cells.

- a. Help in B-cell activation
- b. Kill the target cell
- c. Proliferate T-cell
- d. Produce cytotoxin

Which of the following antibodies is most abundant in blood circulation?

- a. IgA
- b. IgM
- c. IgG
- d. IgE

A 45-year-old man with a history of allergic rhinitis is found to have elevated levels of which immunoglobulin?

- a. IgG
- b. IgM
- c. IgA
- d. IgE

The innate immune system includes the following components EXCEPT

- a. complement
- b. Natural killer (NK) cells
- c. lung surfactant
- d. B lymphocytes
- e. dendritic cells

Which of the following cells is responsible for the production of antibodies?

- a. Basophils
- b. Neutrophils
- c. T cells
- d. B cells

The immunoglobulin class which is the least abundant in the normal adult is

- a. IgM
- b. IgD
- c. IgA
- d. IgE.
- e. IgG

Cells Involved In Innate Immunity are_____.

- a. Natural Killer Cells
- b. All of the above
- c. Phagocytes
- d. Macrophages

Which cells are primarily responsible for the direct attack on a transplanted organ?

- a. Neutrophils
- b. Macrophages
- c. B cells
- d. T cells

A patient with type 1 diabetes mellitus has antibodies against pancreatic beta cells. This condition is an example of:

- a. Type I hypersensitivity
- b. Type IV hypersensitivity
- c. Type II hypersensitivity
- d. Type III hypersensitivity

Which of the following cells is involved in cell-mediated immunity?

- a. Leukaemia
- b. Thrombocytes
- c. Mast cells
- d. T cells

All of the following are true with respect to IgE molecules, EXCEPT which one?

- a. They are the least abundant immunoglobulin in the serum.
- b. They are involved in mediating anti-parasitic immune responses.
- c. They will cross the placenta and fix complement.
- d. They are the principal immunoglobulin class involved in allergic reactions.
- e. They can effect the release of histamine and other chemical mediators.

In a viral infection, which type of T cell is responsible for clearing the infection?

- a. Memory T cells
- b. CD8+ T cells
- c. Regulatory T cells
- d. CD4+ T cells

If angioedema recurs without a clear cause, which of the following should be considered?

- a. An autoimmune disorder
- b. An environmental allergy
- c. Hereditary or acquired angioedema
- d. Emotional or psychologic triggers

Which of the following is an example of Type I hypersensitivity?

- a. Contact dermatitis
- b. Rheumatoid arthritis
- c. Anaphylaxis
- d. Tuberculosis skin test reaction

Monocytes differentiate into which kind of phagocytic cells?

- a. T cell
- b. B cell
- c. Neutrophil
- d. Macrophage

Which type of graft is most likely to be accepted without rejection?

- a. Allograft
- b. Autograft
- c. Isograft
- d. Xenograft

A 12-year-old boy is infected with a virus. His immune system processes viral antigens for presentation to T cells. Which molecule presents these antigens to CD8+ T cells?

- a. MHC class II
- b. B cell receptor
- c. MHC class I
- d. T cell receptor

The primary role of IgA is to:

- a. Mediate allergic reactions
- b. Initiate complement activation
- c. Provide immunity in mucosal surfaces
- d. Neutralize toxins

An organism's capacity to fend off infections from pathogens is referred to as

- a. Hypersensitivity
- b. Immunity
- c. Infection
- d. Allergy

A 25-year-old woman with a history of autoimmune disease is found to have high levels of autoreactive antibodies. This is indicative of a failure in which immune tolerance mechanism?

- a. Central tolerance
- b. Peripheral tolerance
- c. Immune privilege
- d. Complement regulation

A researcher is developing a new vaccine that uses mRNA technology. The primary advantage of this type of vaccine is:

- a. It can be rapidly modified to respond to emerging pathogens.
- b. It is safer because it does not use live pathogens.
- c. It provides lifelong immunity after a single dose.
- d. It does not require adjuvants.

Which of the following molecules is essential for antigen presentation to T cells?

- a. Histamine
- b. Immunoglobulin G (IgG)
- c. Major Histocompatibility Complex (MHC)
- d. Complement proteins

When a B-cell undergoes immunoglobulin class switching

- a. both the variable and constant regions change
- b. the variable region of the light chain changes, but its constant region remains the same
- c. the variable region of the heavy chain remains the same but its constant region changes
- d. the variable region of the light chain remains the same, but its constant region changes
- e. the variable region of the heavy chain changes but its constant region remains the same

The T-cell receptor genes were originally identified using:

- a. monoclonal anti-idiotypic.
- b. In situ hybridization.
- c. The polymerase chain reaction.
- d. Subtractive hybridization.
- e. A liver DNA gene library.

Edward Jenner vaccinated against smallpox using:

- a. Killed smallpox virus
- b. Cowpox
- c. A recombinant protein derived from smallpox
- d. Toxoid
- e. An unrelated virus

What is the origin of B-cell?

- a. Pancreas
- b. Liver
- c. Thymus
- d. Bone marrow

The variable region of an antibody is responsible for:

- a. Activating the complement system
- b. Binding to antigens
- c. Binding to Fc receptors
- d. Determining the antibody class

A 40-year-old man with tuberculosis has a positive tuberculin skin test. This reaction is an example of which type of immune response?

- a. Cell-mediated immunity
- b. Complement-mediated lysis
- c. Humoral immunity
- d. Antibody-dependent cellular cytotoxicity

A patient develops a red, swollen arm 6 hours after receiving a tetanus shot. This reaction is best described as:

- a. Immediate hypersensitivity (Type I)
- b. Anaphylaxis
- c. Delayed-type hypersensitivity (Type IV)
- d. Arthus reaction (Type III hypersensitivity)

A 35-year-old man develops a severe rash 48 hours after exposure to poison ivy. This reaction is an example of:

- a. Type I hypersensitivity
- b. Type IV hypersensitivity
- c. Type II hypersensitivity
- d. Type III hypersensitivity

A 70-year-old man receives an influenza vaccine but fails to develop immunity. Tests reveal low T cell counts. Which process was likely impaired?

- a. Antibody production by B cells
- b. Activation of cytotoxic T cells
- c. Phagocytosis by neutrophils
- d. Complement activation

Which of the following may partly explain the increased incidence of illnesses such as pneumonia and influenza and the reduced effectiveness of vaccines in the elderly?

- a. The binding affinity of antibody to antigen is decreased.
- b. Macrophages destroy antigens more slowly.
- c. There are fewer lymphocytes that can respond to new antigens.
- d. Less complement is produced in response to bacterial infections.

Which of the following amino acid is found in the hinge region?

- a. Phenylalanine
- b. Asparagine
- c. Alanine
- d. Proline and cysteine

One principal function of complement is to

- a. Bind antibodies attached to cell surfaces and to lyse these cells
- b. mediate the release of histamine
- c. cross link allergens
- d. inactivate perforins
- e. phagocytize antigens

Antigen sequestration is

- a. the phagocytosis of bacteria by leukocytes
- b. the presentation of antigenic products on MHC II molecules
- c. the uptake of antigen by Peyer's patches
- d. the removal of self recognising lymphocytes from the lymphocyte population
- e. where tissues in which antigens are located do not communicate with blood or lymph

Several of the complement components are:

- a. Cytokines
- b. Enzymes
- c. Antibodies
- d. Glycolipids
- e. Hormones

Which of the following immunity is obtained during a lifetime?

- a. Acquired immunity
- b. Active immunity
- c. None of the above.
- d. Passive immunity

A patient with a viral infection shows an increase in interferon production. The primary role of interferon in this context is to:

- a. Stimulate antibody production
- b. Enhance antigen presentation to T cells
- c. Neutralize the virus directly
- d. Activate B cells

Which of the following polypeptide is important for the expression of MHC I on the cell membrane?

- a. Lymphokines
- b. β 2-microglobulin
- c. Interleukins
- d. Interferons

A patient is advised to receive a flu shot annually because:

- a. The virus can reactivate each year
- b. The vaccine only provides temporary protection
- c. New strains of the flu virus emerge each year
- d. The immune system forgets how to respond to the flu virus

Specific antibodies are readily detectable in serum following primary contact with antigen after:

- a. 1 h
- b. 10 min
- c. 3–5 weeks
- d. 5–7 days
- e. Only following a second contact with antigen

Which of the following immunity is present from our birth?

- a. Passive immunity
- b. Innate Immunity
- c. Active immunity
- d. Acquired immunity

A 50-year-old man with a history of hepatitis C presents with generalized fatigue and jaundice. Laboratory tests show elevated liver enzymes and the presence of autoantibodies. The likely mechanism for his liver damage is:

- a. Toxin-mediated liver injury
- b. Immune-mediated destruction of hepatocytes
- c. Direct viral cytotoxicity
- d. Obstruction of bile ducts

Concerning HIV complications

- a. infections
- b. 5% of infected individuals will develop a malignancy
- c. Kaposi sarcoma is more common in patients who acquired the disease parenterally
- d. Invasive candidiasis is common
- e. Atypical pneumonia caused by *Mycoplasma pneumoniae* is one of the sentinel
- f. Toxoplasmosis is responsible for 50% of mass lesions in the CNS of HIV patients

Which of the following cytokines is most closely associated with the activation of T cells?

- a. Tumor necrosis factor-alpha (TNF- α)
- b. Interferon-gamma (IFN- γ)
- c. Interleukin-4 (IL-4)
- d. Interleukin-2 (IL-2)

A researcher is developing a new vaccine and chooses to include an adjuvant. The primary purpose of the adjuvant is to:

- a. Enhance the body's immune response to the vaccine
- b. Inactivate the pathogen
- c. Increase the stability of the vaccine
- d. Prevent side effects

The processing of cytosolic protein involves:

- a. Binding to the MHC class II groove.
- b. Displacement of invariant chain.
- c. Displacement of beta2-microglobulin.
- d. Transport into late endosomes.
- e. Proteasome-mediated cleavage.

A patient is diagnosed with hyper-IgM syndrome. This condition is characterized by:

- a. Overproduction of all immunoglobulins
- b. Overproduction of IgM and deficiency of other immunoglobulins
- c. Deficiency of all immunoglobulins
- d. Excessive production of IgE

Name the major constituents of cytotoxic T-lymphocyte?

- a. Lymph
- b. Protein
- c. Perforin and granzyme
- d. Lysozyme

Complement component C3 is cleaved by:

- a. C3bBb
- b. Factor B
- c. Factor D
- d. C3b
- e. Factor H

Pattern recognition receptors (PRR) include:

- a. LPS.
- b. Lipoteichoic acid.
- c. Lectin-like molecules.
- d. PAMPs.
- e. Unmethylated CpG sequences.

Which of the following is a method for determining the number and type of immune cells in a blood sample?

- a. Northern blot
- b. Western blot
- c. Flow cytometry
- d. ELISA

The mononuclear phagocyte system does not include:

- a. Endothelial cells.
- b. Monocytes.
- c. Kidney mesangial cells.
- d. Kupffer cells.
- e. Lymph node medullary macrophages

The class I major histocompatibility complex (MHC)

- a. β -microglobulin on the MHC is expressed on the HLA A locus
- b. is encoded for on the short arm of chromosome 16
- c. has a low level of polymorphism
- d. is expressed on all cells of the body
- e. are encoded for by three loci designated HLA-A, HLA-B and HLA-C

A 10-year-old girl with a history of skin infections is diagnosed with a Toll-like receptor (TLR) defect. This defect primarily affects which branch of the immune system?

- a. Adaptive immunity
- b. Innate immunity
- c. Cell-mediated immunity
- d. Humoral immunity

What is the name of the hypervariable region of immunoglobulin, which is responsible for its diversity?

- a. Agrelope
- b. CDR
- c. Hinge region
- d. Epitope

A Fab fragment:

- a. Lacks light chains.
- b. Is produced by pepsin treatment.
- c. Is produced by separation of heavy and light chains.
- d. Binds antigen.
- e. Has no interchain disulfide bonds.

Which technique involves the amplification of DNA?

- a. PCR
- b. Immunohistochemistry
- c. ELISA
- d. Western blot

Name the drug which is used to isolate hybridoma cells from the media?

- a. Cocaine
- b. Aminopterin
- c. Opium
- d. Amphetamine

The processed peptide binding to the MHC class I groove:

- a. Is derived from exogenous protein taken in by endocytosis.
- b. Is usually more than 11 amino acids long.
- c. Usually binds to the groove through 2 anchor residues.
- d. Is mainly recognized by the CDR2 of the T-cell receptor chains.
- e. Hangs over the ends of the groove

In a laboratory study, Western blotting is used to detect specific proteins in a patient's serum. This technique relies on:

- a. Flow cytometry
- b. ELISA
- c. Antigen-antibody interactions
- d. DNA sequencing

A 30-year-old man has recurrent bacterial infections despite being vaccinated. Laboratory tests reveal a lack of antibodies in his serum. Which cell type is likely deficient?

- a. Macrophages
- b. Dendritic cells
- c. T cells
- d. B cells

Ig idiotypes are found:

- a. In the variable region of both heavy and light chains.
- b. In the constant region of the heavy chain.
- c. In the constant region of the light chain.
- d. In the hinge region.
- e. Only in the light chain.

Which of the following is a common trigger of anaphylaxis?

- a. Tuberculosis infection
- b. Bee sting
- c. Pollen exposure
- d. Bacterial infection

N-region insertion is associated with the expression of:

- a. Lysozyme.
- b. Heat shock proteins.
- c. The proteasome.
- d. Terminal deoxynucleotidyl transferase.
- e. NK cell antigen receptors.

Which hypersensitivity reaction is associated with immune complex deposition?

- a. Type III
- b. Type IV
- c. Type I
- d. Type II

The main reason an experimental animal treated with X-rays can act as a Living test tube for lymphocyte transfer experiments is because:

- a. It is microbiologically sterile
- b. The requirement for T-cell help is overcome
- c. Complement components will be inactivated
- d. The host lymphocytes are destroyed or unable to divide
- e. Only non-dividing cells are affected

Clonal selection occurs when antigen is encountered by:

- a. Eosinophils
- b. T-cells
- c. Basophils
- d. Neutrophils
- e. Mast cells

Antigen processing for presentation by MHC class II molecules involves:

- a. DM
- b. Calnexin
- c. LMP2
- d. TAP1 and TAP2
- e. Proteasomal-mediated cleavage

Concerning HIV

- a. T-tropic strains use CXCR4 chemokine receptor to infect host cells
- b. M-tropic viruses are the dominant virus type found in newly infected individuals
- c. all of the above is true
- d. M-tropic strains use CCR5 chemokine receptor to infect host cells
- e. progression
- f. accumulation of T tropic virus is a sign of the final rapid phase of disease

Which type of vaccine contains live but weakened pathogens?

- a. Toxoid vaccines
- b. Subunit vaccines
- c. Attenuated vaccines
- d. Inactivated vaccines

Name the group of pattern recognition molecules which functions exclusively as a signaling receptor?

- a. LPS
- b. Toll-like receptor
- c. CRP
- d. MBL

A laboratory is testing for the presence of viral RNA in a patient's sample. Which technique is most appropriate?

- a. Polymerase chain reaction (PCR)
- b. Flow cytometry
- c. Immunofluorescence
- d. Western blotting

A 35-year-old man experiences a delayed hypersensitivity reaction after a tetanus booster shot. Which cell type is primarily responsible for this response?

- a. B cells
- b. CD8+ T cells
- c. CD4+ T cells
- d. Neutrophils

Concerning the mechanisms of autoimmune disease

- a. normal MHC molecules are incapable of presenting self antigens
- b. the actual genes associated with most autoimmune diseases is now known
- c. these diseases can spontaneously resolve, a process known as epitope spreading
- d. few autoimmune diseases are associated with preceding infections
- e. molecular mimicry may play a role in the development

IgA in seromucus secretions:

- a. Has no secretory piece.
- b. Cannot bind to neutrophils.
- c. Has no J-chain.
- d. Activates the classical complement pathway.
- e. Is dimeric.

Which of the following statement is INCORRECT about superantigens?

- a. Activate a large number of T-cells
- b. Endogenous by nature
- c. Viral or bacterial proteins
- d. Unique binding ability

Which of the following statements best characterizes an antibody?

- a. An antibody contains high molecular weight RNA as its basic structure.
- b. An antibody contains mucopolysaccharides as its major chemical component and the synthesis of these may be elicited by the administration of a foreign protein or polysaccharide.
- c. An antibody is composed of four identical protein subunits which may be caused to dissociate by treatment with urea.
- d. An antibody is composed of protein and cannot be distinguished from the albumin fraction of the serum proteins.
- e. An antibody contains protein as its major chemical component and its synthesis may be elicited by the administration of a foreign protein or polysaccharide.

An organism's capacity to fend off infections from pathogens is referred to as

- a. Allergy
- b. Hypersensitivity
- c. Immunity
- d. Infection

The branch of biology, which involves the study of immune systems in all organisms is called_____.

- a. Biotechnology
- b. Zoology
- c. Immunology
- d. Microbiology

HIV

- a. has limited variability expressed in its genome
- b. has two viral glycoproteins, gp120 and gp41, which are vital for infection of cells
- c. envelope is lipopolysaccharide
- d. invades CD4+ cells, but does not invade macrophages
- e. is a double stranded RNA virus

A 60-year-old man undergoes a kidney transplant. Three months later, he develops signs of kidney failure. A biopsy shows dense lymphocytic infiltrates in the graft. This is most likely due to:

- a. Acute rejection
- b. Hyperacute rejection
- c. Chronic rejection
- d. Graft-versus-host disease (GVHD)

Which of the following immunity is obtained during a lifetime?

- a. Passive immunity
- b. Active immunity
- c. Innate immunity
- d. Both Active and Passive Immunity

A patient with a mismatched organ transplant develops hyperacute rejection within minutes. Which of the following is most responsible for this reaction?

- a. Inflammatory cytokines
- b. T cell-mediated cytotoxicity
- c. Pre-formed antibodies
- d. Delayed-type hypersensitivity

Graves' disease is associated with which type of hypersensitivity reaction?

- a. Type I
- b. Type III
- c. Type IV
- d. Type II

An adjuvant in a vaccine is used to:

- a. Inactivate the pathogen
- b. Neutralize the antigen
- c. Enhance the immune response
- d. Provide immunity without causing an immune response

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- a. CD8+ T cells
- b. CD4+ T cells
- c. Neutrophils
- d. B cells

Which of the following statements is true about the IgM of humans?

- a. IgM is produced by high-affinity plasma cells
- b. IgM can protect the mucosal surface
- c. IgM can cross the placenta
- d. IgM is primarily restricted in the circulation

A patient receiving a kidney transplant must be matched for which of the following?

- a. Neither blood group nor tissue type
- b. Only tissue type
- c. Only blood group
- d. Blood group and tissue type

The classical and alternative pathways meet at complement component:

- a. C4
- b. C3
- c. Factor D
- d. C5
- e. C4b

Neutrophil defensins are:

- a. Anti-toxins.
- b. Enzymes.
- c. Oxygen-dependent.
- d. Glycolipids.
- e. Peptide antibiotics.

The TLR9 pattern recognition receptor recognises:

- a. Gram -ve LPS.
- b. Gram +ve peptidoglycan.
- c. Mycobacterial lipoarabinomannan.
- d. dsRNA.
- e. CpG motifs.

A patient with X-linked agammaglobulinemia has no mature B cells. Which of the following immune responses would be most affected?

- a. Complement activation
- b. Cell-mediated immunity
- c. Phagocytosis
- d. Antibody production

A 60-year-old woman experiences chronic rejection of a liver transplant. This form of rejection is primarily due to:

- a. Acute T cell-mediated response
- b. Gradual damage from chronic inflammation and fibrosis
- c. Immediate graft destruction by NK cells
- d. Pre-existing antibodies

The complementarity determining regions:

- a. Are in the constant part of the Ig molecule.
- b. Bind to Fc receptors.
- c. Are restricted to light chains.
- d. Occur at the C-terminal end of the Ig peptide chains.
- e. Are concerned in antigen recognition

A researcher studying antigen presentation discovers a mutation in a gene coding for MHC class II molecules. Which of the following immune responses would be most directly affected?

- a. Activation of CD8+ T cells
- b. Opsonization of bacteria
- c. Antibody-dependent cell-mediated cytotoxicity
- d. Activation of CD4+ T cells

A newborn is diagnosed with severe combined immunodeficiency (SCID). This condition is characterized by:

- a. Deficiency in both B and T cell function
- b. Deficiency in T cell function
- c. Deficiency in B cell function
- d. Overactivation of immune cells

The TLR9 pattern recognition receptor recognises:

- a. Mycobacterial lipoarabinomannan.
- b. Gram –ve LPS.
- c. CpG motifs.
- d. dsRNA.
- e. Gram +ve peptidoglycan.

The classical and alternative pathways meet at complement component:

- a. C4
- b. C3
- c. Factor D
- d. C5
- e. C4b

Name the macrophages which are associated central nervous system.

- a. Kupffer cell
- b. Alveolar macrophages
- c. Mesangial
- d. Microglial cells

A 10-year-old boy is brought to the emergency room with severe shortness of breath after being stung by a bee. His skin is flushed, and he has a rapid pulse. Which of the following is the most likely mechanism for his symptoms?

- a. Type IV hypersensitivity reaction
- b. Type I hypersensitivity reaction
- c. Type II hypersensitivity reaction
- d. Type III hypersensitivity reaction

N-region insertion is associated with the expression of:

- a. Terminal deoxynucleotidyl transferase.
- b. NK cell antigen receptors.
- c. Lysozyme.
- d. The proteasome.
- e. Heat shock proteins.

A Fab fragment:

- a. Has no interchain disulfide bonds.
- b. Binds antigen.
- c. Is produced by pepsin treatment.
- d. Lacks light chains.
- e. Is produced by separation of heavy and light chains.

Which of the following is NOT typically included in a vaccine formulation?

- a. Antibiotic
- b. Antigenic component
- c. Adjuvant
- d. Stabilizer

Binding of antigen to antibody:

- a. Is usually unaffected by pH.
- b. Is optimized by spatial complementarity.
- c. Involves covalent bonding.
- d. Is unaffected by the presence or absence of water molecules.
- e. Is usually unaffected by molecular rigidity.

A 40-year-old man with asthma is prescribed an inhaler containing a corticosteroid. This medication helps manage his symptoms by:

- a. Neutralizing allergens
- b. Enhancing mucus production
- c. Reducing inflammation in the airways
- d. Blocking histamine release

What cytokines are produced in response to viral infection?

- a. Interferons
- b. Lymphokines
- c. Monokines
- d. Interleukins

In the context of transplantation, which cells are primarily responsible for graft rejection?

- a. Natural killer cells
- b. Neutrophils
- c. Cytotoxic T cells
- d. B cells

A patient is receiving immunosuppressive therapy after a heart transplant. Which aspect of the immune response is most targeted by this treatment?

- a. T cell activation and proliferation
- b. Phagocytosis by neutrophils
- c. Antibody production by B cells
- d. Complement activation

A patient presents with recurrent infections and is found to have a defect in phagocytosis. Which of the following conditions is most likely?

- a. Wiskott-Aldrich syndrome
- b. Chronic granulomatous disease (CGD)
- c. X-linked agammaglobulinemia
- d. DiGeorge syndrome

Which of the following is NOT the characteristics of a good antigen.

- a. Reproduce only by binary fission
- b. Large in size
- c. Highly complex
- d. Foreignness

A 28-year-old woman presents with shortness of breath, wheezing, and chest tightness during pollen season. Which type of hypersensitivity is she most likely experiencing?

- a. Type I
- b. Type III
- c. Type II
- d. Type IV

Which of the following cells has a high affinity receptor for IgE?

- a. Dendritic cell
- b. Mast cells
- c. Basophils
- d. Eosinophils

The immunoglobulin Joining chain (J-chain) is

- a. associated with IgE for histamine release
- b. only produced by neutrophils
- c. associated with only multimeric forms of IgM and IgA
- d. only produced by T-Cells
- e. only produced by mast cells

A 55-year-old woman with chronic granulomatous disease (CGD) is at increased risk for infections due to:

- a. Impaired T cell function
- b. Defective complement activation
- c. Impaired phagocytosis
- d. Defective antibody production

Flow cytometry is primarily used to:

- a. Measure the concentration of proteins in a sample
- b. Detect specific DNA sequences
- c. Separate proteins based on their size
- d. Analyse the physical and chemical characteristics of cells

Which of the following is NOT polymorphonuclear leukocytes?

- a. Basophils
- b. Macrophages
- c. Mast cell
- d. Eosinophils

A patient with systemic lupus erythematosus (SLE) develops kidney damage due to immune complex deposition. Which type of hypersensitivity is involved?

- a. Type IV hypersensitivity
- b. Type II hypersensitivity
- c. Type I hypersensitivity
- d. Type III hypersensitivity

Which part of the antibody interacts with immune cells via Fc receptors?

- a. Fab region
- b. Hypervariable region
- c. Light chain
- d. Constant region

Which of the following statement is INCORRECT about superantigens?

- a. Unique binding ability
- b. Activate a large number of T-cells
- c. Viral or bacterial proteins
- d. Endogenous by nature

Which method is often used for genotyping organisms or identifying pathogens?

- a. Immunofluorescence
- b. ELISA
- c. PCR
- d. Flow cytometry

The basic Ig unit is composed of:

- a. 2 identical heavy and 2 different light chains.
- b. 2 identical heavy and 2 identical light chains.
- c. 2 different heavy and 2 identical light chains.
- d. Non-covalently bound polypeptide chains.
- e. 2 different heavy and 2 different light chains.

Synthesis of antibodies takes place by which of the following cells?

- a. T-cells
- b. Bone marrow cells
- c. Lymph
- d. B-cells

Name the dendritic cell, which does not function as antigen presenting cell?

- a. Lymphoid dendritic cell
- b. Follicular dendritic cell
- c. Myeloid dendritic cell
- d. Langerhans cell

A newborn is diagnosed with severe combined immunodeficiency (SCID). This condition is characterized by:

- a. Deficiency in both B and T cell function
- b. Deficiency in T cell function
- c. Overactivation of immune cells
- d. Deficiency in B cell function

What is the name of the hypervariable region of immunoglobulin, which is responsible for its diversity?

- a. Hinge region
- b. Agretope
- c. Epitope
- d. CDR

Which cytokine is primarily produced by Th1 cells to activate macrophages?

- a. IL-10
- b. IFN- γ
- c. TNF- α
- d. IL-4

Tolerance of self-antigen by B-cells are known as B-cell tolerance.

- a. True
- b. False

A patient has a genetic mutation that prevents proper formation of the invariant chain. This defect would impair which immune function?

- a. Activation of cytotoxic T cells
- b. Activation of natural killer cells
- c. Production of antibodies
- d. Presentation of antigens by MHC class II molecules

In the context of transplantation, "MHC" refers to:

- a. Minor Histocompatibility Complex
- b. Major Histocompatibility Complex
- c. Microbial Host Complex
- d. Multiple Hormone Complex

A patient with HIV is found to have a significantly reduced CD4+ T cell count. This primarily impairs which aspect of the immune response?

- a. Complement activation
- b. Antibody production
- c. Phagocytosis by neutrophils
- d. Activation of macrophages and cytotoxic T cells

A patient with a deficiency in natural killer (NK) cells would have trouble defending against which type of pathogen?

- a. Extracellular bacteria
- b. Parasitic worms
- c. Fungi
- d. Intracellular viruses

Which of the following is NOT a component of the innate immune system?

- a. Neutrophils
- b. Complement proteins
- c. Natural killer cells
- d. T cells

A patient receives a penicillin injection and develops anaphylaxis. This severe reaction is due to which hypersensitivity mechanism?

- a. Type IV hypersensitivity
- b. Type I hypersensitivity
- c. Type III hypersensitivity
- d. Type II hypersensitivity

Using only random VDJ recombination, from 40 V, 30 D and 6 J gene segments, the number of possible variable regions of an antigen receptor molecule would be:

- a. 1.4×10^6
- b. 7,200
- c. 1.4×10^9
- d. 40
- e. 76

Which of the following immunoglobulins is present normally in plasma at the highest concentration?

- a. IgE
- b. IgA
- c. IgD
- d. IgM
- e. IgG

Plasma cells:

- a. Have a highly developed rough endoplasmic reticulum
- b. Are derived from T-cells
- c. Develop into B-cells
- d. Secrete large amounts of gamma interferon
- e. Have a thin layer of cytoplasm

The membrane attack complex consists of:

- a. C3b3b,Bb
- b. Colicins
- c. Properdin
- d. C5b,6,7,8,9
- e. OH.

The purpose of a vaccine is to:

- a. Inhibit the growth of bacteria
- b. Neutralize toxins directly
- c. Stimulate an immune response without causing disease
- d. Provide passive immunity by transferring antibodies

Which of the tracing is NOT the role of T-cell receptor complex?

- a. CD40L
- b. α and β chain
- c. CD3
- d. CD19

Which cells are involved in directly killing virus-infected cells?

- a. Helper T cells
- b. B cells
- c. Dendritic cells
- d. Cytotoxic T cells

Mast cells

- a. inhibit platelet activation, but are otherwise inflammatory cells
- b. can phagocytose antigen
- c. are bone marrow derived cells
- d. none of the above is true
- e. are the primary cell involved in type II hypersensitivity reactions

Name the dendritic cell, which does not function as antigen presenting cell?

- a. Myeloid dendritic cell
- b. Langerhans cell
- c. Follicular dendritic cell
- d. Lymphoid dendritic cell

A researcher isolates a monoclonal antibody specific for a tumor antigen. This antibody could be used for:

- a. Diagnosis of autoimmune diseases
- b. Prevention of allergies
- c. Targeted cancer therapy
- d. Treatment of infections

All of the following are true about antibodies, EXCEPT which one?

- a. They predominate the primary immune response to antigen.
- b. They occur on the surface of B-lymphocyte
- c. They fix complement.
- d. They are glycoproteins.
- e. They are molecule with a single, defined amino acid sequence

The major immunoglobulin family to which a particular immunoglobulin belongs can be determined by sequential analysis of the 110 amino acids beginning from the

- a. Amino terminus of the light chain.
- b. Amino terminus of the heavy chain.
- c. Carboxy terminus of the light chain.
- d. None of the above
- e. Carboxy terminus of the heavy chain

A 15-year-old boy with a peanut allergy accidentally ingests peanuts and experiences anaphylaxis. Which of the following mediators is primarily responsible for his symptoms?

- a. Interleukin-2 (IL-2)
- b. Interferon-gamma (IFN- γ)
- c. Histamine
- d. Tumor necrosis factor-alpha (TNF- α)

A patient with a genetic mutation in the Fc region of their IgG antibodies would have difficulty with which of the following functions?

- a. Neutralization of pathogens
- b. Antigen presentation
- c. Antigen binding
- d. Opsonization and phagocytosis

Out of these, which transcription factor does not take part in B-cell activation?

- a. Abl
- b. NF- κ B
- c. Fos
- d. Jun

A patient with a history of multiple blood transfusions develops fever, chills, and urticaria after receiving another transfusion. This reaction is most likely due to:

- a. Acute hemolytic transfusion reaction (Type II)
- b. Delayed hemolytic transfusion reaction (Type III)
- c. Anaphylactic transfusion reaction (Type I)
- d. Febrile non-hemolytic transfusion reaction (Type IV)

Central tolerance

- a. occurs for B cells in the thymus
- b. means that in a normal individual, T cells bearing receptors for autoantigens are never present
- c. none of the above is true
- d. prevents immature B cells from reacting to self, as they undergo apoptosis if exposed to membrane bound antigen within the bone marrow
- e. describes a state of anergy towards antigen presenting cells

Western blotting is commonly used to:

- a. Measure the amount of RNA in a sample
- b. Quantify antibody levels
- c. Detect specific proteins in a sample
- d. Identify DNA mutations

Helper T cells (CD4⁺ cells) are important because they:

- a. Produce antibodies
- b. Phagocytose pathogens
- c. Activate B cells and cytotoxic T cells
- d. Directly kill infected cells

Name the class of immunoglobulin which has a pentameric structure?

- a. IgE
- b. IgG
- c. IgM
- d. IgA

Class switching of immunoglobulins occurs

- a. binds complement
- b. mediates immunoglobulin class switching
- c. causes the histamine release
- d. results in the glycosylation of immunoglobulins
- e. Usually with booster immunizations, going from IgM to IgG

Name the cytokines which act as a T-cell growth factor?

- a. IL-5
- b. IL-3
- c. IL-2
- d. IL-4

A 6-year-old boy with frequent infections is found to have low levels of immunoglobulins. Which of the following is the most likely diagnosis?

- a. Hyper-IgM syndrome
- b. Common variable immunodeficiency (CVID)
- c. Wiskott-Aldrich syndrome
- d. DiGeorge syndrome

A patient receives a bone marrow transplant and later develops graft-versus-host disease (GVHD). Which cell type from the donor is most responsible for this reaction?

- a. NK cells
- b. T cells
- c. Neutrophils
- d. B cells

Which organ is most commonly transplanted?

- a. Kidney
- b. Liver
- c. Heart
- d. Lung

A 30-year-old woman presents with swelling and redness in her joints, and laboratory tests show elevated levels of rheumatoid factor (RF). This condition is primarily mediated by:

- a. Type III hypersensitivity
- b. Type IV hypersensitivity
- c. Type II hypersensitivity
- d. Type I hypersensitivity

Which of the following statements is true about hyperacute rejection?

- a. It is mediated by pre-existing antibodies.
- b. It occurs days to weeks after transplantation.
- c. It is easily reversible with medication.
- d. It involves gradual loss of organ function.

Which of the following is NOT the characteristics of a good antigen.

- a. Highly complex
- b. Large in size
- c. Foreignness
- d. Reproduce only by binary fission

What immune cell type predominates in the perfollicular regions of the white pulp in the spleen?

- a. B Lymphocytes
- b. Mast cells
- c. Plasma cells
- d. T lymphocytes
- e. Macrophages

A 28-year-old woman presents with shortness of breath, wheezing, and chest tightness during pollen season. Which type of hypersensitivity is she most likely experiencing?

- a. Type III
- b. Type I
- c. Type IV
- d. Type II

A 10-year-old boy is brought to the emergency room with severe shortness of breath after being stung by a bee. His skin is flushed, and he has a rapid pulse. Which of the following is the most likely mechanism for his symptoms?

- a. Type IV hypersensitivity reaction
- b. Type III hypersensitivity reaction
- c. Type II hypersensitivity reaction
- d. Type I hypersensitivity reaction

How many types of antibodies are there?

- a. Three.
- b. Four.
- c. Two.
- d. Five.

Which type of bond holds the heavy and light chains of an antibody together?

- a. Peptide bonds
- b. Ionic bonds
- c. Hydrogen bonds
- d. Disulfide bonds

The class of an immunoglobulin

- a. is determined by the heavy chain type
- b. determined by the antigen
- c. is determined by Class I and Class II major histocompatibility complex proteins
- d. is determined by the carbohydrate attached to the light chain is
- e. Is determined by the J-chain

Which of these immunoglobulins is present in external secretion?

- a. IgA
- b. IgE
- c. IgG
- d. IgM

Concerning HIV infection

- a. Neurons are infected by HIV
- b. A and B are true
- c. Macrophages are easily destroyed by HIV virus replicating in the phagolysosome
- d. Infected monocytes transport the virus to the brain
- e. The type of virus that infects the microglia is M-tropic

Skin, body hair, cilia, eyelashes, the respiratory tract and the gastrointestinal tract are examples of _____.

- a. Physiological barriers
- b. Physical barrier
- c. Cytokine barriers
- d. Cellular barriers

Who discovered the structure of immunoglobulin by treating it with beta-mercaptoethanol?

- a. Whittaker
- b. Edelman
- c. Porter
- d. Nisonoff

A patient with chronic granulomatous disease has a defect in the NADPH oxidase complex. This defect primarily affects which aspect of immune defence?

- a. Phagocytic killing of bacteria
- b. Antibody production
- c. Antigen presentation
- d. T cell activation

One principal function of the Class I and Class II major histocompatibility complex S proteins is to

- a. bind complement
- b. present antigen for recognition by the T-cell antigen receptor
- c. mediate immunoglobulin class switching
- d. stimulate production of interleukins
- e. transduce the signal to the T-cell interior following antigen binding

A 2-year-old child receives a measles vaccine. Which component of the immune system is most directly responsible for the long-term immunity conferred by this vaccine?

- a. Natural killer cells
- b. Neutrophils
- c. Macrophages
- d. Memory B cells

Peripheral tolerance is maintained by all of the following mechanisms except

- a. Suppression by regulatory T cells
- b. clonal deletion by activation-induced cell death
- c. Antigen sequestration
- d. deletion of T-cells that express high affinity for self antigens during maturation in the thymus
- e. Anergy

A patient with a weakened immune system is advised against receiving certain vaccines. Which type of vaccine is likely contraindicated?

- a. Subunit vaccines
- b. Live attenuated vaccines
- c. Conjugate vaccines
- d. Inactivated vaccines

A booster shot is often required for certain vaccines because:

- a. The initial dose is not sufficient to elicit immunity
- b. The vaccine does not contain a strong enough adjuvant
- c. The pathogen mutates rapidly
- d. Memory cells need to be re-stimulated for long-term immunity

Chediak-Higashi syndrome is caused due to deficiency of _____

- a. Mast cell
- b. Basophils
- c. Neutrophils
- d. NK cells

Which of the following vaccines is an example of a subunit vaccine?

- a. Bacillus Calmette-Guérin (BCG) vaccine
- b. Hepatitis B vaccine
- c. Oral polio vaccine (OPV)
- d. Measles, Mumps, and Rubella (MMR) vaccine

A patient with a deficiency in natural killer (NK) cells would have trouble defending against which type of pathogen?

- a. Parasitic worms
- b. Extracellular bacteria
- c. Intracellular viruses
- d. Fungi

The initial complement component that is bound by complement-fixing antibodies is:

- a. C1q
- b. C5a
- c. C1s
- d. C9
- e. C3b

Which of the following gene clusters do not contribute to antigen binding:

- a. D
- b. J
- c. VL
- d. VH
- e. CL

The major role of the complement system is to work in conjunction with

- a. antibodies to opsonize cells
- b. the major histocompatibility complex for cell recognition
- c. antibodies to lyse cells via the C8 and C9 components
- d. the T-cell receptor for production of lymphokines
- e. antibodies to lyse cells via the perforin molecules

The Mantoux test (TB skin test) is an example of which type of hypersensitivity?

- a. Type III
- b. Type II
- c. Type IV
- d. Type I

Name the part of processed antigen that binds to the MHC molecule and recognized by T-cells?

- a. Chaperone
- b. Epitope
- c. Immunoglobulin
- d. Agrelope

Mark the one which is NOT used in generating antibody diversity?

- a. Somatic hypermutation
- b. Combinatorial V(D)J joining
- c. Binary fission
- d. Juntional and insertional diversification

A 50-year-old woman is found to have elevated levels of IgE antibodies. Which of the following conditions is she most likely to have?

- a. Bacterial infection
- b. Viral infection
- c. Allergic reaction
- d. Autoimmune disorder

Which of these is NOT a characteristic feature of adaptive immunity?

- a. Immunogenic memory
- b. Diversity
- c. Antigen no-specific
- d. Self/ non-self recognition

What is the name of MHC in humans?

- a. H2
- b. Adjuvants
- c. HLA
- d. Haplotype

Which of the following statements is incorrect? Affinity is:

- a. Related to specificity.
- b. Avidity.
- c. elated to the free energy change of the Ag/Ab interaction.
- d. The association constant of the Ag/Ab equilibrium.
- e. A measure of the strength of the binding of antigen to antibody.

Regarding the proportion of circulating lymphocytes

- a. none of the above figures is correct
- b. the B cell make up 50%
- c. neutrophils make up 90%
- d. Plasma cells make up 50%
- e. the T cell make up 60-70%

A researcher finds that a patient's cytotoxic T cells are unable to recognize and kill infected cells. Which molecule on the infected cells is likely defective?

- a. MHC class I
- b. CD28
- c. CD4
- d. B7

A newborn develops jaundice due to hemolytic disease of the newborn, a condition where maternal antibodies attack fetal red blood cells. Which type of hypersensitivity is this?

- a. Type II hypersensitivity
- b. Type IV hypersensitivity
- c. Type I hypersensitivity
- d. Type III hypersensitivity

A patient is found to have a defect in the JAK-STAT pathway, affecting cytokine signalling. This defect would impair which immune function?

- a. Phagocytosis
- b. Antibody production
- c. Antigen presentation
- d. Cytokine-induced gene transcription

Immunological unresponsiveness to self antigens is called:

- a. Memory
- b. Tolerogen
- c. Tolerance
- d. Acquired immunity
- e. ADCC

Major Histocompatibility Complex is a tight cluster of linked _____

- a. Lipid molecules
- b. Genes
- c. Proteins
- d. Carbohydrates

Neutrophils, basophil, lymphocytes, eosinophil and monocytes are examples of _____.

- a. Physiological barriers
- b. Cytokine barriers
- c. Physical barrier
- d. Cellular barriers

Cytokinin which acts as a growth factor of B-cell is _____

- a. IL-13
- b. $\text{TNF}\beta$
- c. IL-10
- d. $\text{IFN}\gamma$

Natural killer cells

- a. are a predominant cell in adaptive immunity
- b. kill cells that over-express class I MHC molecules, such as tumour cells
- c. have the ability to kill a cell without prior sensitisation
- d. are leukocytes
- e. unlike other cells of the immune system, do not produce cytokines

Name the cytokines which released in response to virus infection?

- a. Monokines
- b. Interleukins
- c. Lymphokines
- d. Interferons

Name the class of immunoglobulin which takes part in hypersensitivity reaction?

- a. IgA
- b. IgG
- c. IgE
- d. IgM

B-cells and T-cells are two types of cells involved in _____.

- a. Active immunity
- b. Passive immunity
- c. Acquired immunity
- d. Innate Immunity

A researcher wants to measure cytokine levels in a patient's blood sample. Which technique should they use?

- a. PCR
- b. Flow cytometry
- c. Western blot
- d. ELISA

IgM:

- a. Is most commonly tetrameric.
- b. Is usually of high affinity.
- c. Is a weak bacterial agglutinator.
- d. Has the same number of constant domains as IgG.
- e. Is the main class of the 'natural antibodies'.

Which of the following techniques is used to quantify specific antibodies in a sample?

- a. Flow cytometry
- b. Western blot
- c. PCR
- d. ELISA

Natural killer (NK) cells are unique because they:

- a. Produce antibodies
- b. Can kill cells without prior sensitization
- c. Are part of the adaptive immune system
- d. Require antigen presentation to function

Which of the following is true regarding IgE?

- a. It is primarily found in mucosal secretions.
- b. It is the first antibody produced during an infection.
- c. It is the most abundant antibody in serum.
- d. It plays a key role in allergic reactions.

The technique of ELISA can be used to detect:

- a. Specific antigens or antibodies
- b. Protein-protein interactions
- c. DNA mutations
- d. Cellular proliferation

Mark the one, which is NOT a lymphoid progenitor cell.

- a. NK cells
- b. B-cell
- c. T-cell
- d. Monocyte

Concerning HIV

- a. progression
- b. all of the above is true
- c. M-tropic strains use CCR5 chemokine receptor to infect host cells
- d. accumulation of T tropic virus is a sign of the final rapid phase of disease
- e. M-tropic viruses are the dominant virus type found in newly infected individuals
- f. T-tropic strains use CXCR4 chemokine receptor to infect host cells

A plasma cell secretes:

- a. The antigen it recognizes
- b. Many different types of antibody
- c. Antibody of two antigen specificities
- d. Antibody of a single specificity related to that on the surface of the parent B-Cell
- e. Lysozyme

Which of the following does not protect body surfaces:

- a. Gastric acid.
- b. Skin.
- c. Salivary amylase
- d. Gut microflora.
- e. Mucus.

Which of the following is used to prevent organ rejection after a transplant?

- a. Antihistamines
- b. Antiviral medications
- c. Antibiotics
- d. Immunosuppressive drugs

In systemic anaphylaxis

- a. there is widespread oedema, but the larynx is spared
- b. the symptoms usually follow administration of foreign proteins
- c. a previous history of some form of allergy is always present
- d. the severity of the response is proportional to the concentration of the antigen
- e. hives are not a feature

Herd immunity occurs when:

- a. A high percentage of the population is immune to a disease
- b. Every individual in a population is vaccinated
- c. The pathogen mutates and becomes less virulent
- d. Antibiotics are widely used in a community

A newborn is protected from infections by maternal antibodies. Which class of antibodies is primarily responsible for this passive immunity?

- a. IgM
- b. IgA
- c. IgE
- d. IgG

A patient with rheumatoid arthritis is prescribed methotrexate. The primary function of this medication is to:

- a. Stimulate T cell activity
- b. Enhance cytokine production
- c. Suppress the immune response
- d. Increase antibody production

Name the first cell which recruited at the place of infection.

- a. Nk cells
- b. Macrophages
- c. Nutrophils
- d. Basophils

chromosome on which T-cell receptor alpha chain gene rearrangement has occurred lacks which of the following gene segments:

- a. Constant (C).
- b. Joining (J).
- c. TCR beta chain.
- d. Diversity (D).
- e. Variable (V).

Which of the following does not characterize adaptive immunity

- a. Immunogenic memory
- b. Diversity
- c. Non-specific antigens
- d. Self- and non-self-recognition

Which of the following statements does not apply to the immunoproteasome:

- a. It contains the polymorphic LMP7 subunit.
- b. It exhibits both chymotrypsin-like and trypsin-like activities.
- c. It is generated in response to interferon-gamma stimulation.
- d. Ten per cent of the peptides generated are 8–9 residues in length.
- e. It contains the nonpolymorphic MECL1 subunit.

Which of the following does not act as a protecting barrier for the body surface?

- a. Skin
- b. Gastric acid
- c. Mucus
- d. Salivary amylase

A 15-year-old boy with a history of frequent viral infections is found to have a reduced number of CD8+ T cells. Which of the following functions is most likely impaired?

- a. Complement activation
- b. Antibody production
- c. Phagocytosis
- d. Cytotoxic killing of infected cells

The cytoplasmic region of surface IgM consists of:

- a. Carbohydrate.
- b. 3 amino acids.
- c. A light chain.
- d. 110 amino acids.
- e. A single H chain constant region domain.

Which of the following cell is a multipotent cell?

- a. T-cell
- b. B-cell
- c. Monocytes
- d. HSC

Memory B cells are important in the immune system because they:

- a. Initiate a rapid secondary immune response
- b. Activate the complement system
- c. Phagocytose pathogens
- d. Produce cytokines

Cell-mediated immunity is primarily mediated by:

- a. Macrophages
- b. B cells
- c. T cells
- d. Natural killer cells

Hybridoma technology is used to produce_____

- a. Monoclonal antibodies
- b. Antibodies
- c. Interferons
- d. Immune response

An example of secondary mediators released by Mast cells would be

- a. heparin
- b. tryptase
- c. platelet activating factor
- d. chymase
- e. histamine