Immunology Job Interview Questions And Answers



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Immunology Interview Questions And Answers Guide.

Question - 1: Expand cell line HL-60. Ans:

Human myeloid leukemia cell line View All Answers

Question - 2: How B cell hybridomass are formed?

Ans: They are formed by the fusion of antigen primed B cells with cancerous plasma cells. <u>View All Answers</u>

Question - 3: Name the assay method for insulin in serum.

Ans: ELISA or RIA View All Answers

Question - 4: Name the assay method for horsemeat combination of hamburger.

Ans: Agglutination View All Answers

Question - 5: Name the assay method for compliment component C3 on glomerullar basement membrane.

Ans: Immunofluorescence <u>View All Answers</u>

Question - 6: Name the assay method for IgG in serum.

Ans: The method is ELISA. <u>View All Answers</u>

Question - 7:

What does the following sentence means? T cell is said to be class I restricted.

Ans:

It means that they can recognize the antigen, which is, associated with class I MHC molecules. <u>View All Answers</u>

Question - 8:



Describe major events in the inflammatory response.

Ans:

The following are the major events in the inflammatory response: The diameter of the capillaries increases in the affected region and their permeability, which facilitates influx of white blood cells. <u>View All Answers</u>

Question - 9:

Name some features of a secondary immune response that distinguish it from primary immune response

Ans:

Secondary immune response requires an amplified population of memory cells. Response is more rapid compared to primary immune response. View All Answers

Question - 10:

Give an example for alloantigen

Ans:

Blood group antigens are alloantigens. <u>View All Answers</u>

Question - 11:

What is the other name of isoantigen?

Ans:

The other name is Alloantigen. <u>View All Answers</u>

Question - 12:

What is an iso antigen?

Ans:

It is produced only by some members of a species but not the others. These are capable of eliciting immune response in the individuals that lack the antigen. <u>View All Answers</u>

Question - 13:

What is i-gene?

Ans:

It is a bacterial gene, that code for lac operon- repressor protein. View All Answers

Question - 14:

What is immunoblotting?

Ans:

This is a technique to determine the presence of an antigen by the reaction of labeled antibodies to the antigen. This is done after separating the antigens according to the size or charge by gel electrophoresis.

Question - 15:

What is immunolabeling?

Ans:

Labeling molecules by the use of antibodies bound to another molecule that serves as labels for an antigen antibody complex. <u>View All Answers</u>

Question - 16:

What is an intron?

Ans:

The nucleotide sequence present between exons of a gene. They can be removed by the process of splicing. <u>View All Answers</u>

Question - 17:

What is an exon?

Ans:

Exon is a region of a gene that contains coding sequences for a "polypeptide". <u>View All Answers</u>



Question - 18:

What is the host defense mechanism shown if the infection is through toxin-induced damage of host cells?

Ans:

Neutralization of toxin by antibodies View All Answers

Question - 19:

What is the host defense mechanism shown if the infection is through invasion of host tissues?

Ans:

Antibody mediated agglutination. View All Answers

Question - 20:

What is the host defense mechanism shown if the infection is through proliferation?

Ans:

Phagocytosis compliment mediated lysis localized inflammatory response. View All Answers

Question - 21:

What is the host defense mechanism shown if an attachment is made to host cell?

Ans:

Blockage of attachment by secretory IgA antibodies View All Answers

Question - 22:

What is the response type and activity shown by effector molecule natural killer cell macrophages?

Ans:

Cell mediated immune response. Activity: Kills virus infected cells by ADCC. View All Answers

Question - 23:

What is the response type and activity shown by effectors molecule cytotoxic T cells?

Ans:

Cell mediated immune response. Activity: Kills virus infected self-cells. View All Answers

Question - 24:

What is the response type and activity shown by effectors molecule IFN ? secreted by TH or TC cell?

Ans:

Cell mediated immune response. View All Answers

Question - 25:

What is the response type and activity shown by effectors molecule compliment activated by IgG or IgM?

Ans:

Mediated opsonization View All Answers

Question - 26:

What is the response type and activity shown by effectors molecule IgM?

Ans:

Agglutination

View All Answers

Question - 27:

What is the response type and activity shown by effector molecule IgG, IgM?

Ans:

Enhances phagocytosis by opsonization



View All Answers

Question - 28: What is the response type and activity shown by effectors molecules IgG, IgM and IgA? Ans: Blocks fusion of viral envelope to the cell plasma membrane <u>View All Answers</u>

Question - 29: What is the response type and activity shown by effector molecule IgA? Ans:

Blocks binding of virus to host cells, thus preventing infection <u>View All Answers</u>

Question - 30: What is the mechanism of host defense in trypanosomiasis? Ans:

Opsonises for phagocytosis <u>View All Answers</u>

Question - 31: What is the mechanism of host defense in chagas disease? Ans:

Lysis in presence of compliment View All Answers

Question - 32: What is the mechanism of host defense in leishmaniasis? Ans:

Restrict the spread of disease. <u>View All Answers</u>

Question - 33: What is the mechanism of host defense in malaria? Ans: Blocks invasion and opsonises for phagocytosis View All Answers

Question - 34: Name the parasite, which causes sleeping sickness or trypanosomiasis? Ans: Trypanosoma rhodense, Trypanosoma gambiense <u>View All Answers</u>

Question - 35: Name the parasite, which causes chagas disease? Ans: It is Trypanosoma cruzi. <u>View All Answers</u>

Question - 36: Name the parasite, which causes leishmaniasis? Ans: It is Leishmania species. <u>View All Answers</u>

Question - 37: Name the parasite, which causes malaria? Ans:



The parasites that cause malaria are Plasmodium vivax, Plasmodium falcifarum. <u>View All Answers</u>

Question - 38:

What are tumor antigens?

Ans:

Tumor antigens are cell surface proteins, which are present on the surface of tumor cells that induce cell-mediated immune response. <u>View All Answers</u>

Question - 39:

What is a vaccine?

Ans:

It is a preparation of antigenic material used to induce immunity against pathogens. <u>View All Answers</u>

Question - 40:

What is tapasin?

Ans:

It is a protein that is associated with class I MHC molecules. <u>View All Answers</u>

Question - 41:

What is a stem cell?

Ans:

It is a cell, from which differentiated cells derive. <u>View All Answers</u>

Question - 42:

What is a pathogen?

Ans:

Pathogen is a disease-causing organism. View All Answers

Question - 43:

What is multiple sclerosis?

Ans:

An autoimmune disease affects the central nervous system. <u>View All Answers</u>

Question - 44:

What is myeloma protein?

Ans:

It is a monoclonal immunoglobulin, which is produced by myeloma cell. <u>View All Answers</u>

Question - 45:

What is a myeloma cell?

Ans: It is a cancerous plasma cell. <u>View All Answers</u>

Question - 46: What is microglial cell?

Ans: Macrophage found in central nervous system is called microglial cell. <u>View All Answers</u>

Question - 47: What is lysogeny?

Ans:

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The condition in which viral genome that is provirus associated with host genome in a way that the viral genes remain in unexpressed state. <u>View All Answers</u>

Question - 48:

What is isotype switching?

Ans:

It is conversion of antibody class to another resulting from genetic rearrangement of heavy chain constant region genes in B cells. Isotype switching is also called as class switching.

Question - 49:

Define the term immunity

Ans:

Immunity refers to the resistance exhibited by the host towards injury caused by microorganisms and their products.

(Or) Immunity is concerned with resistance to infection.

View All Answers

Question - 50:

Define immune system

Ans:

Immune system is a defense system that protects from pathogenic microorganisms (harmful) and cancer.

View All Answers

Question - 51:

Into how many types immunity is classified.

Ans:

Immunity is classified into two types.

- 1. Innate immunity (or) native immunity (or) natural immunity
- 2. Acquired immunity

View All Answers

Question - 52:

Define innate immunity.

Ans:

Innate immunity is the resistance to diseases that an individual has from the time of its birth.

View All Answers

Question - 53:

Define acquired immunity.

Ans:

The resistance that an individual acquired during life is known as acquired immunity. Unlike innate immunity, this immune system is highly adaptive and exhibits four characteristic features.

- 1. Antigen specificity
- 2. Diversity
- 3. Immunologic memory
- 4. Recognition of self from non-self antigens

View All Answers

Question - 54:

How many types of defensive barriers are there in innate immunity?

Ans:

There are four types of defensive barriers.

- 1. Anatomic
- 2. Physiologic
- 3. Endocytic and phagocytic and
- 4. Inflammatory components
- View All Answers

Question - 55:

How many major groups of cells are involved in acquired immunity?

Ans:

It involves two groups of cells. They are Lymphocytes



Antigen Presenting Cells (APCs) View All Answers

Question - 56:

Into how many types acquired immunity is classified.

Ans:

- Acquired immunity is classified into two types.
- 1. Active immunity and
- 2. Passive immunity

View All Answers

Question - 57:

Define active immunity?

Ans:

Active immunity is the resistance developed by an individual because of antigenic stimulus.

View All Answers

Question - 58:

Define passive immunity?

Ans:

The resistance that is transmitted from a recipient in a ready-made form is known as passive immunity.

View All Answers

Question - 59:

Into how many types is active immunity further classified? What are they?

Ans:

Active immunity is classified into two types-

- 1. Natural active immunity
- 2. Artificial active immunity

View All Answers

Question - 60:

Define natural active immunity, and give an example to support the definition?

Ans:

Natural active immunity results either from a clinical or in appointed infection with a parasite. Ex: 1. a person who has recovered from an attack of measles develops natural active immunity. Ex: 2. the immunity is life long in case of viral diseases such as chicken pox or measles.

View All Answers

Question - 61:

Define artificial active immunity, and give an example?

Ans:

It is the resistance induced by vaccines. Vaccine is preparation of live or killed microorganisms or their products used for immunization. Ex: 1. Bacterial vaccines- 1) Live - BCG for Tuberculosis Killed - TAB for entire fever. Ex: 2.Viral vaccines- 1) Live - ORAL polio militias. Killed - SALK polio militias

View All Answers

Question - 62:

How Passive immunity is classified?

Ans:

Passive immunity is classified into two types.

- 1. Natural passive immunity
- 2. Artificial passive immunity

View All Answers

Question - 63:

What is natural passive immunity?

Ans:

It is the resistance passively transferred from the mother to the baby. Antibodies are transferred predominantly through the placenta. By active immunization of mother during pregnancy is possible to improve the quantity of immunity.

View All Answers



Question - 64:

What is artificial passive immunity?

Ans:

It is the resistance passively transferred to a recipient by administration of antibodies.

View All Answers

Question - 65:

What are primary lymphoid organs?

Ans:

Thymus and Bone marrow are the primary lymphoid organs. During haematopiosis, immature lymphocytes are generated. These become mature and acquire immune competence within primary lymphoid organs. Primary lymphoid organs are also called as central lymphoid organs.

View All Answers

Question - 66:

What are secondary lymphoid organs?

Ans:

Lymphode, spleen, various mucosal associated lymphoid tissues (MALT) are secondary lymphoid organs. After acquiring immune competency, the lymphocytes migrate along blood and lymph streams and accumulate in the peripheral lymphoid organs.

View All Answers

Question - 67:

What is the function of thymus?

Ans:

The primary function of thymus is the production of thymic lymphocyte. It is the major site for lymphocyte proliferation in the body.

View All Answers

Question - 68:

What is the relation between thymus and immune function?

Ans:

The importance of thymus in lymphocyte proliferation and development of cell mediated immune response came from experiments involving neonatal thymectomic in which the thymus was surgically removed from newborn mice. These thymectaomide mice showed a dramatic decrease in T-Lymphocytes and an absence of cell mediated immune response. This condition is seen in congenital birth defect in humans.

View All Answers

Question - 69:

What is the function of bone marrow?

Ans:

Bane marrow serves as a site for B-cell development and maturation. Immature B-cells proliferate and differentiate within the microenvironment of the bone marrow into immuno competent of bursal lymphocyte (or) B-cell.

View All Answers

Question - 70:

What are T- cells?

Ans:

Lymphocytes produced in the thymus are called as T-cells or thymus dependant lymphocytes. View All Answers

Question - 71:

What is bursa of fabricius?

Ans:

It is a lympho epithelial organ arising as a pouch from the dorsal part of the cloacae in birds. Its development, structure, and function are parallel to those of thymus. In birds, it is the primary site of B-cells maturation.

View All Answers

Question - 72:

What is haematopoisis?

Ans:

Formation and development of red and white blood cells from stem cell is called haematopoisis. <u>View All Answers</u>

Question - 73:



What are lymphocytes?

Ans:

They are the central cells of immune system responsible for acquired immunity, diversity, specificity, memory, self and non-self recognition. Lymphocytes are small, round cells found in peripheral blood, lymph, lymphoid organs and in many tissues. View All Answers

Question - 74:

Give the classification of lymphocytes

Ans:

They are classified into two types. T- lymphocytes: derived from thymus B - lymphocytes: derived from bone marrow <u>View All Answers</u>

Question - 75:

What is B - lymphocyte?

Ans:

They are derives from bone marrow stem cells. Their development and maturation takes place in bone marrow. Matured B-cells leave the bone marrow and migrate via blood stream to the secondary lymphoid organs.

View All Answers

Question - 76:

What are plasma cells?

Ans:

They are antibody-secreting cells. They are oval in shape and twice the size of small lymphocytes, with a centrally placed oval nucleus containing large blocks of chromatin located peripherally.

View All Answers

Question - 77:

What is the life span of a plasma cell?

Ans:

The life span of a plasma cell is 2 - 3 days. <u>View All Answers</u>

Question - 78:

What are TH- cells?

Ans:

T helper cells (TH) will recognize the antigen when it is presented by antigen presenting cell along with MHC class - II complex. They secrete various cytokines activate B - cells Tc cells and a variety of cells that participate in the immune response.

Question - 79:

What are null cells?

Ans:

The lymphocytes that are devoid of markers for T and B- cells are called null cells. View All Answers

Question - 80:

Give the classification of null cells.

Ans:

- Null cells are classified into three types.
- 1. Natural killer cells
- 2. Antibody dependant cellular cytotoxic cells
- 3. Lymphokine activated killer cells.

View All Answers

Question - 81:

What are natural killer cells?

Ans:

These are large granulated lymphocytes posses' spontaneous cytotoxicity towards various target cells mainly the malignant cells and virus infected cells. Their cytotoxicity is not antibody dependant. They bind to glycoprotein receptor of target cells and release cytolytic factor.



Question - 82:

What are phagocytic cells (macrophages)?

Ans:

All macrophages originate from bone marrow stem cells in the form of monoblast, which develop into promonocytes and monocytes. Monocytes enter the blood and their half-life in the blood is about 3 days. Later they enter into the tissues and develop into macrophages.

Question - 83:

Immature macrophages, which are present in the blood stream, are called as.

Ans:

Immature macrophages, which are present in the blood stream, are called as Monocytes.

View All Answers

Question - 84:

Macrophages, which are present in the connective tissue, are called as.

Ans:

Macrophages, which are present in the connective tissue, are called as Histocytes. <u>View All Answers</u>

Question - 85:

Macrophages, which are present in the liver, are called as.

Ans:

Macrophages, which are present in the liver, are called as Kupffer cells <u>View All Answers</u>

Question - 86:

Macrophages, which are present in the brain, are called as.

Ans:

Macrophages, which are present in the brain, are called as Microglia. <u>View All Answers</u>

Question - 87:

Macrophages, which are present in the lungs, are called as.

Ans:

Macrophages, which are present in the lungs, are called as Alveolar Macrophages. View All Answers

Question - 88:

What are dendritic cells?

Ans:

Cells, which help in presentation of antigen to cell during primary immune response, are dendritic cells. They have no phagocytic activity and are highly polymorphic. They are present in peripheral lymphoidal organs particularly and in the germinal centers of spleen and lymph nodes.

Question - 89:

What are microphages?

Ans:

Neutrophils, oesnophils, basophils are called as microphages.

View All Answers

Question - 90:

What are neutrophils?

Ans:

They are most abundant leucocytes. Constitute 60 - 75% of blood leucocytes. They are active in phagocytosis. View All Answers

Question - 91:

What are oesnophils?

Ans:

They are found in large number in allergic inflammatory actions and in parasitic infections.



View All Answers

Question - 92:

What are basophils?

Ans:

They are found in blood and in tissues. They contain several hydrolytic enzymes and amines like histamine, serotonin etc. View All Answers

Question - 93: What are immunoglobulins?

Ans:

Immunoglobulins are glycoproteins, each molecule containing two pairs of polypeptide chains of different sizes, smaller ones are called light chains (L), and larger ones are called heavy chains (H).

View All Answers

Question - 94:

Name the bond linking L chain and H chain.

Ans:

Disulphide bond View All Answers

Question - 95:

Name the bond linking the two heavy chains

Ans: 1-2 disulphide bonds View All Answers

Question - 96:

Name the scientists who elucidated the basic structure of immunoglobulin.

Ans:

Rodney Porter and Gerald Edelman View All Answers

Question - 97:

What are the domains, which are present in the light chain?

Ans:

Light chain contains one variable domain (VL) and one constant domain (CH). View All Answers

Question - 98:

What are the domains, which are present in heavy chain?

Ans:

Heavy chain contains one variable domain (VH) and either 3 or 4 constant domains (CH1, CH2, CH3, and CH4). View All Answers

Question - 99:

The area of the H chain, which is between CH1 and CH2 domain, is called as_

Ans:

Hinge region. It is rich in Proline and second highest amino acid cysteine. View All Answers

Question - 100:

Give the classification of immunoglobulin molecules.

Ans:

Immunoglobuins are classified into 5 different types. They are 1) IgG 2) IgA 3) IgM 4) IgD 5) IgE

View All Answers



Question - 101:

How immunoglobulins are measured?

Ans:

Immunoglobulins are measured using sedimentation coefficient (measured by Svedberg) or 'S' value.

View All Answers

Question - 102:

What are isotypes?

Ans:

IgG, IgA, IgM, IgD, IgE classes are variants of immunoglobulin molecule. They are termed as isotypic variants or isotypes.

View All Answers

Question - 103:

Briefly describe Immunoglobulin (Ig) G.

Ans:

1) This is the major serum Ig containing 75% of the total serum immunoglobulin concentration.

- 2) It has a molecular weight of 150,000 Daltons and sedimentation coefficient is seven.
- 3) Its half-life is approximately 23 days.
- 4) It is the Ig, which is normally transported across the placenta and provides natural passive immunity to the newborn

5) It participates in immunological reactions such as compliment fixation, precipitation, and neutralization of toxins and viruses.

6) It is secreted in large amounts during secondary immune response.

View All Answers

Question - 104:

Briefly describe Immunoglobulin (Ig) A.

Ans:

1) It is the second most abundant class containing 10-13% if serum immunoglobulins.

- 2) It has a half-life of 6-8 days.
- 3) IgA is actively secreted by mucosal associated lymphoidal tissue (MALT).
- 4) Its molecular weight is 60,000 Daltons.

5) IgA is synthesized locally by plasma cells and dimerized intra-cellular before secretion, with the help of cysteine rich polypeptide, called the J chain, which has a molecular weight of 15,000.IgA functions by inhibiting the adherence of coated microorganisms to the surface of mucosal cells.

View All Answers

Question - 105:

Briefly describe immunoglobulin (Ig) E.

Ans:

1) It is a monomer having a molecular weight of about 200,000 Daltons and has a sedimentation coefficient of 85.

- 2) Its half life is about 2 days
- 3) Its concentration in serum is very low i.e. 0.3 mg/ml.
- 4) It exhibits unique property such as heat labiality and affinity for the surface of tissue cells such as mast cells.
- 5) It does not pass the placental barrier.
- 6) It is chiefly produced in the linings of respiratory and intestinal tracks.
- 7) It is responsible for the anaphylactic type of hypersensitivity.
- 8) The physiological role of IgE appears to be protection against pathogens by mast cells degranulation and release of inflammatory mediators.
- 9) Interleukin fold enhances the secretion of IgE.

View All Answers

Question - 106:

Define immunoglobulin D

Ans:

- * Molecular weight of IgD is185, 000 Daltons and has a sedimentation coefficient of 7S.
- * Its concentration in serum is about 3 mg/100ml, which constitutes about 0.2% of total Ig.
- * It is mostly intra vascular in distribution.
- * Its half-life is about 3days.
- * It is rich in carbohydrates.
- * IgD along with IgM occurs on the surface of unstimulated or mature B cells and serves as a reorganization receptor for antigens.
- * No biological effect or function has been identified for IgD.

View All Answers

Question - 107:

Briefly describe immunoglobulin M.

Ans:

- 1) It constitutes 5.8% of total immunoglobulins. It has a normal serum level of 0.5 to 2 mg/ml.
- 2) it is a pentamer having a molecular weight of 900,000 Daltons and has a sedimentation coefficient of 19S. It is phylogenetically oldest immunoglobulin.3) It has a half-life of about 5 days.
- 4) 5 monomers are arranged with their Fc fragments in the centre of the pentamer and the antigen binding sites towards the periphery of the molecule.



5) It is the first immunoglobulin to be synthesized by the foetus beginning by about 20 weeks of age.

6) It is 500-1000 times more effective than IgG in opsonization.

7) It particularly gives protection against microorganisms and other larger antigens that have repeating antigenic determines on their surface.

View All Answers

Question - 108:

Give the classification of IgG.

Ans:

IgG is again sub divided in 4 sub classes. They are

- 1. IgG 1 2. IgG 2
- 2. IgG 2 3. IgG 3
- 4. IgG 4

View All Answers

Question - 109:

Give the classification of IgA.

Ans:

IgA occurs in two forms.

* Serum IgA

* Secondary IgA

View All Answers

Question - 110:

What is serum IgA?

Ans:

It is a monomer. It has a molecular weight of 160,000 Daltons and sedimentation coefficient of 7S.

View All Answers

Question - 111:

What is Secondary IgA?

Ans:

It is a dimer of molecular weight of 400,000 Daltons and sedimentation coefficient of 11S.

It contains a glycin rich polypeptide called a secretary component or secretary piece. It is relatively resistant to digestive enzymes and reducing enzymes. It is believed to play an important role in local immunity against respiratory and intestinal pathogens.

View All Answers

Question - 112:

What is opsonisation?

Ans:

Immunoglobulins specific for particulate antigens such as bacteria play an important role by coating the surface of the bacteria and making the antigen more susceptible for phagocytosis. This process is called as opsonisation.

View All Answers

Question - 113:

What is an antigen?

Ans:

A substance that can produce a specific immune response when it is introduced into the animals and that can react specifically with the products of immune response is generally known as an antigen.

View All Answers

Question - 114:

What is antigensity?

Ans:

The ability of an antigen to combine specifically with the final products of immune response is called as antigensity. <u>View All Answers</u>

Question - 115:

What is an immunogen?

Ans:

The ability of a material to induce immune responses referred as immunogenicity and such material is known as an immunogen. <u>View All Answers</u>



Question - 116:

Into how many types is immune response divided?

Ans:

Immune response is divided into two types

- 1. Humoral immune response
- 2. Cell mediated immune response.

View All Answers

Question - 117:

What is immunogenesity?

Ans:

The ability of a material to induce an immune response is referred to as immunogenesity.

View All Answers

Question - 118:

What is humoral immune response?

Ans:

It is based on antibodies. It is conferred to non-immune individuals by administration of serum antibodies from an immune individual. Antibodies bind to the antigens and facilitate their elimination by forming clusters through cross-linking.

View All Answers

Question - 119:

What is cell-mediated immune response?

Ans:

It is based on T cells. These T cells are of two types.

T helper cells (TH)

T cytotoxic cells. (TC)

T helper cells interact with antigen MCH II present on APC (Antigen presenting cell) and secrete cytokines. These activate B cells, Tc cells and other phagocytic cells; these activated phagocytic cells kill microorganisms like protozoa and bacteria.

View All Answers

Question - 120:

What are haptens?

Ans:

Haptens are small molecules that can react specifically with antibodies but cannot initiate immune response by themselves. They have property of antigenesity, but lack immunogenicity.

View All Answers

Question - 121:

Give an example for hapten molecule.

Ans:

Small molecules such as DNP (Dinitro phenyl), M-amino benzene sulphonate by themselves are not immunogenic. However, when they conjugate with a protein such as Bovine serum Albumin (BSA), they can act as complete antigens.

Question - 122:

What are the factors that influence immunogenesity?

Ans:

A number of factors have been identified which make a substance antigenic. They are -

- * Size * Chemical nature
- * Susceptibility to tissue enzymes
- * Foreignness
- * Immunogen dose and route of administration

View All Answers

Question - 123:

Briefly describe about size of a molecule, which make a substance antigenic.

Ans:

Molecule size of an antigen has a direct relation to antigenesity. Very large molecules such as haemocyanin (6.7 million Daltons) and thymoglobulin (669 kd) are highly antigenic where as low molecular weight compounds whose molecular weight is less than 10,000 Daltons are poor antigenic. Ex: Insulin and histones <u>View All Answers</u>

Question - 124:



Briefly describe about the chemical nature of the molecule, which make a substance antigenic.

Ans:

Most naturally, occurring antigens are proteins and polysaccharides. Lipids and nucleic acids are less antigenic. The antigenic property of these compounds is enhanced by combination with proteins. Certain degree of structural complexity is required for antigenesity. Synthetic polymers are macromolecules in size are not antigenic because they lack structural complexity. Ex: Gelatin

View All Answers

Question - 125:

Briefly, describe about the foreignness of a molecule, which makes a substance antigenic?

Ans:

To be antigenic macromolecules must come from foreign source. Antigens from related species are less antigenic than that of unrelated species. More distance the antigen source the better is the antigenesity.

Ex: Plant proteins are good antigens in animals, where as duck serum proteins are not good antigens for chick.

View All Answers

Question - 126:

Briefly describe about dosage and route of administration, which make a substance antigenic.

Ans:

Combination of optical dosage and routes of administration will induce a peak immune response in a given animal. An insufficient dose will not stimulate an immune response. An excessive dose does not give a peak immune response because it causes a state of immunological unresponsiveness or non-response known as immunological tolerance.

View All Answers

Question - 127:

What is an antigen and antibody interaction?

Ans:

Antigen-antibody interaction is similar to an enzyme substrate interaction. The reaction between antigen and antibody occurs in two stages. Primary stage is the initial interaction of antigen-antibody without any visible effect. The reaction is rapid and obeys the general law of thermodynamics and physical chemistry. The primary stage is followed by the secondary stage leading to demonstrate events such as precipitation, lysis of cells, neutralization of toxins and fixation of compliments etc.

View All Answers

Question - 128:

Give some general features of antigen-antibody interaction.

Ans:

- 1. The reaction is specific and antigen combines only with its corresponding antibody and vice versa.
- 2. Entire molecules react but not the fragment.
- 3. There is no denaturation of antigen or antibody during the reaction.
- 4. The combination of antigen antibody is firm but reversible. The firmness of the reaction is influenced by the affinity and avidity of the reaction.
- 5. Both antigens and antibodies participate in the formation of agglutination and precipitation reactions.
- 6. Antigens and antibodies can combine in various proportions unlike chemicals with fixed valancy.

View All Answers

Question - 129:

What is antigenic specificity?

Ans:

Antigen antibody reaction is specific and specificity is determined by special configuration of antigenic determine.

View All Answers

Question - 130:

What is an epitope?

Ans:

The smallest unit of antigenesity is known as antigenic determinant or epitope. The part of the antigen at which the antibody reacts is known as epitope or antigenic determinant. It is a small area possessing specific chemical structure and stereo configuration on the antigen capable of sensitizing on immuno site and of reacting with its complimentary site on the specific antibody.

View All Answers

Question - 131:

What is a paratope?

Ans:

The portion of the antibody molecule that binds to the epitope is called as paratope. Epitope and paratope determine the specificity of immunological reactions. <u>View All Answers</u>



Question - 132:

What are the forces that are responsible for antigen-antibody reactions?

Ans:

The process that holds antigen-antibody together is called non-specific interactions. Inter molecular forces may be classified into four-

- 1. Electrostatic bonds
- 2. Hydrogen bonds
- Hydrophobic interactions
 Vander Val interactions
- View All Answers

View All Answers

Question - 133:

Explain in brief about electrostatic bonds in antigen-antibody interaction.

Ans:

These are formed due to the attraction between opposite charged protein side chains.

View All Answers

Question - 134:

Explain in brief about hydrogen bonds antigen-antibody interaction.

Ans:

Reversible hydrogen bonds are formed between hydrophilic groups such as hydroxyl, amino and carboxylic group. Although hydrogen bonds are relatively weak, they play an important role in interaction of antigen-antibody.

Question - 135:

Explain in brief about hydrophobic interactions in antigen-antibody interaction.

Ans:

Contribute up to 50% of the total strength of antigen- antibody interactions. These reactions are found when ever the side chains of non-polar amino acids of antigen-antibody come together.

View All Answers

Question - 136:

Explain in brief about Vander Val interactions in antigen-antibody interaction.

Ans:

Temporary transfer of electrons from one molecule to another will result in the force of attraction between them. This is seen when the interacting molecules come close to each other.

View All Answers

Question - 137:

What is affinity of an antibody?

Ans:

The strength of binding of an antibody to a monovalent antigen or single antigenic determinant is called affinity of an antibody. <u>View All Answers</u>

Question - 138:

What is avidity?

Ans:

The capacity of an antiserum containing various antibodies to combine with the whole antigen is called avidity. Thus, avidity is used to denote the overall capacity of an antibody to combine with multivalent antigen. A multivalent antigen has many types of antigenic determinants, when this is injected into the blood each antigenic determinant stimulate the production of particular antibody.

View All Answers

Question - 139:

What is a cross-reaction?

Ans:

Antigen-antibody reactions are specific, but in some cases antibody elicited by one antigen can cross react with another antigen. This reaction is called as cross-reaction and the antigen that produces cross-reaction is called as cross-reactive antigen. Cross-reaction is due to the presence of two or more antigenic determinants on the related antigen.

View All Answers

Question - 140:

Give an example of cross-reaction.

Ans:



Cross reactivity is often observed in polysaccharide antigens that contain similar oligosaccharide residue. A, B, O blood group antigens - These are glycoprotein expressed on RBC.

View All Answers

Question - 141:

What are heterophile antigens?

Ans:

Heterophile antigens are polysaccharides, which are structurally similar because of their limited complexity. They are derived from members of widely separated taxonomic groups.

View All Answers

Question - 142:

What is horseman antigen?

Ans:

The glycolipid antigens are present in most tissues of guinea pigs but not in the RBC. They are found in gastrointestinal mucosa in some people. This horseman antigen will not induce antibody formation.

View All Answers

Question - 143:

Into how many types is antigen-antibody reactions are broadly classified?

Ans:

- It is broadly classified into five-
- 1. Precipitation
- 2. Agglutination
- 3. Complement fixation
- 4. Immunoassay using labeled reagents
- 5. Immunohistrochemistry (Immunoflourescence)

View All Answers

Question - 144:

Briefly describe about precipitation reaction.

Ans:

When a soluble antigen combines with corresponding antibody in the presence of electrolyte at a suitable temperature and pH, the antigen-antibody complex forms an insoluble precipitate .Antibodies that form precipitate ate called precipitants. View All Answers

Question - 145:

Give the mechanism of precipitation.

Ans:

Marrak proposed the lattice hypothesis to explain the mechanism of precipitation. The amount of precipitate formed is greatly influenced by relative proportions of antigens and antibodies. The valency of antigens is multivalent. When antigen-antibody is in optimal concentration, the precipitation is complete. So that, large lattice is formed.

View All Answers

Question - 146:

What are the three distinct phases that a precipitation shows?

Ans:

The three distinct phases are Ascending part called 'zone of antibody excess'. A peak called 'zone of equivalence' A descending part called 'zone of antigen excess'. View All Answers

Question - 147:

What is zone of antibody excess?

Ans:

In this, the first available antigen is completely filled by antibody molecules. Hence, no antigenic determinant is left out free. Unreacted antibody is seen in large amount, hence poor lattice formation.

View All Answers

Question - 148:

What is zone of equivalence?

Ans:



In this, ratio of antigen-antibody is seen optimal which results in large multimolecular lattice, hence maximum precipitation is observed. <u>View All Answers</u>

Question - 149:

What are the applications of precipitation reactions?

Ans:

- 1. Precipitation reaction is the basic reaction for a number of techniques.
- 2. It is less sensitive for detecting antibodies.
- 3. Precipitation reactions in gels have several advantages rather than in liquid medium.
- 4. They have forensic application in identification of blood and seminal stains.

View All Answers

Question - 150:

What are immuno diffusion reactions?

Ans:

These reactions can be used to determine relative concentrations of antigens and antibodies to compare antigens and to determine the relative purity of an antigen. They are mainly preformed in 1% agarose gels.

View All Answers

Question - 151:

Name the two-immuno diffusion techniques.

Ans:

* Radial immuno diffusion method and

* Double immuno diffusion in two dimensions View All Answers

Question - 152:

What is radial immuno diffusion method?

Ans:

It is used to qualitate the antigen. Suitable dilution of antiserum is incorporated in the agar gel. Antigen is added to the wells cut on the surface of the gel. As the antigen diffuses into the agar region, equivalence is established and ring of precipitation is formed. The area of precipitin ring is directly proportional to the concentration of antigen. By comparing the area of precipitin with a standard curve obtained by measuring the precipitin area of known concentration of antigen, the concentration of antigen in the given sample can be determined.

View All Answers

Question - 153:

What is the limitation for radial immuno diffusion method?

Ans:

This method cannot the antigens present in concentration below 5-10 micro grams/ml.

View All Answers

Question - 154:

What is double immuno diffusion method?

Ans:

In this method, both antigens and antibodies diffuse radically from wells towards each other by establishing a concentration gradient. As equivalence is reached, a visible line of precipitation is observed.

The patterns of precipitin lines that are formed when two different antigens are placed in adjacent wells indicate whether they share any common epitope or not. Identity occurs when two antigens share identical epitopes; hence, the line of precipitation formed by them will fuse to give single curve line of identity. Non-identity occurs when two antigens are unrelated. The antiserum form independent precipitin lines that cross each other.

Partial identity occurs when two antigens share common epitope. The antiserum forms line of identity with the common epitope and a curved spur with the unique epitope.

View All Answers

Question - 155:

What is immuno electrophoresis?

Ans:

The resolving power of immuno diffusion was greatly enhanced by immuno electrophoresis. This involves the electrophoretic separation of antigen into its constituent proteins followed by immuno diffusion.

This technique is performed on 1% agarose gel. Antigen mixture is first electrophori zed and separated based on charge, troughs are then cut in the agarose gel, and antiserum is added to the troughs.

The agarose gel is then incubated 18-24hrs during which the antigen and antibody diffuse towards each other. The formation of precipitin bands can be observed for the individual antigen components.

View All Answers

Question - 156:



How is immuno electrophoresis more advance than paper electrophoresis?

Ans:

In paper electrophoresis, serum proteins can be separated into 5 different bands but the same protein using immuno electrophoresis can be separated into 30 different proteins.

View All Answers

Question - 157:

Give some applications of immuno electrophoresis.

Ans:

- 1. This technique is useful for testing normal and abnormal proteins in serum and urine.
- 2. It is useful to determine whether a patient produces abnormally a low amount of one or more proteins.
- 3. It is also used if a patient over produces some serum proteins.

View All Answers

Question - 158:

What is counter current immuno electrophoresis?

Ans:

This technique involves the simultaneous electrophoresis of antigen and antibody in the gel in the opposite direction resulting in precipitation of point where there is optimum concentration of antigen-antibody.

This method produces visible precipitin with in 30 minutes and is 10 times more sensitive than the standard double diffusion technique.

View All Answers

Question - 159:

Give application of counter current immuno electrophoresis

Ans:

This technique is applied to detect the antibody against hepatitis-B and to detect antibodies against SLE (systemic leupus erythromotosis) and used to detect specific antigen foe- meningo coccus in cerebrospinal fluid.

View All Answers

Question - 160:

What is immuno fluorescence?

Ans:

Fluorescence is the property of absorbing light ray of particular wavelength and emitting rays in different wavelength. Antigens that are bound to cells or tissue sections can be visualized by tugging the antibody molecule with a fluorescent dye or fluorochrome.

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Question - 161:

What are the most commonly used fluorescent dyes?

Ans:

The most commonly used fluorescent dyes are fluorescin or rhodamine. Both dyes can be conjugated to Fc region of antibody without affecting the specificity of the antigen.

View All Answers

Question - 162:

Into how many types is immuno fluorescence is divided?

Ans:

Immuno fluorescence is divided into 2 types-1. Direct immuno fluorescence

2. Indirect immuno fluorescence

View All Answers

Question - 163:

What is direct immuno fluorescence?

Ans:

In this method, the species antibodies are primary antibodies, which are directly conjugated to fluorescent dye. <u>View All Answers</u>

Question - 164:

What is the disadvantage of direct immuno fluorescence?

Ans:

A separate fluorescent conjugate have to be prepared against each antigen to be tested. <u>View All Answers</u>



Question - 165:

What is indirect immuno fluorescence?

Ans:

In a method the primary unlabelled antibody is detected with a number of reagents have been developed for indirect staining. The most common is fluorescence labeled anti isotype antibody such as fluoroscin labeled goat- mouse antibody. View All Answers

Question - 166:

What are the advantages of indirect immuno fluorescence?

Ans:

The primary does not need to be conjugated with label. It increases the sensitivity of staining because multiple fluorochrome reagents will bind to each antibody molecule. This method has great flexibility.

View All Answers

Question - 167:

What are the uses of indirect immuno fluorescence?

Ans:

1. For identifying bacterial species

- 2. Detecting antigen-antibody complexes in autoimmune diseases
- 3. Detecting compliment components in tissues.
- 4. Localizing hormones

View All Answers

Question - 168:

What is the full form of ELISA?

Ans:

Enzyme Linked Immuno Sorbant Assay. <u>View All Answers</u>

Question - 169:

What is the basic principle of ELISA?

Ans:

The basic principle is an enzyme conjugated to n antibody reacts with a colorless substrate to generate a colored product.

View All Answers

Question - 170:

Name two enzymes that have been employed for ELISA.

Ans:

1. Alkaline, phosphatase, horseradish, preoxidase

2. Para nitro phenyl phosphatase

View All Answers

Question - 171:

What is the significance of ELISA?

Ans:

It is used for the detection and for identification of either antigen or antibody. <u>View All Answers</u>

Question - 172:

In how many ways ELISA can be carried out.

Ans:

It can be carried out in three ways. Indirect ELISA Sand witch ELISA Competitive ELISA View All Answers

Question - 173:

What is the significance of indirect ELISA?

Ans:

It is used for the detection of the presence of serum antibodies against immuno deficiency virus (HIV, the causative agent of AIDS).



View All Answers

Question - 174:

What are the enzymes used for labeling of antibodies?

Ans:

Enzymes used for labeling of antibodies are horseradish peroxidase, alkaline phosphatase, ÄŸ- galactosidase, lacto preoxidase, etc. View All Answers

Question - 175:

What is western blotting?

Ans:

Identification of specific protein in a complex mixture of proteins can be accomplished bye a technique that is known as western blotting. View All Answers

Question - 176:

What is radio immuno assay?

Ans:

It is a competitive binding assay in which fixed amount of antibody and radiolabelled antigen react in the presence of unlabelled antigen. View All Answers

Question - 177

In radio immuno assay what is the used to label an antigen?

Ans:

In this technique, the antigen is generally labeled with a- emitting isotopes such as I125. View All Answers

Question - 178:

What is importance of radio immuno assay?

Ans:

It is the most sensitive technique used for detecting antigen or antibody. This type of reaction is also called as binder ligand assay. View All Answers

Question - 179:

What is an analyte or ligand?

Ans:

The substance whose concentration is to be determined is called as an analyte or ligand. View All Answers

Question - 180:

What is a binder?

Ans:

The binding protein (usually antibody) which binds to the ligand is called as binder. View All Answers

Question - 181:

What is primary immune response?

Ans:

First exposure to an antigen produces primary immune response. View All Answers

Question - 182:

What is inductive or latent period?

Ans:

After immunogen is introduced no antibody is detected, this is latent or inductive period. In this period, immunogen is recognized as a foreign substance. View All Answers

Question - 183:

What is secondary immune response? Ans:



Secondary immune response occurs when second exposure to the same antigen occurs after weeks, months or after years.

View All Answers

Question - 184:

What is attenuation?

Ans:

Natural behavior of an organism without causing disease is called attenuation i.e. reducing pathogenesity of the organism.

Question - 185:

What is vaccination?

Ans:

Vaccination means exploiting the immune system to protect against infectious diseases. Vaccination is done to protect against lethal diseases such as mumps, rubella, poliomyelitis, diphtheria, tetanus, small pox etc. View All Answers

Question - 186:

What is an adjuvant?

Ans:

Adjuvant potentates the immune response Vaccines need to be enhanced by some substances, these substances are called adjuvants. <u>View All Answers</u>

Question - 187:

What are the types in adjuvants?

Ans:

* 1. Organic adjuvants

- * 2. Synthetic adjuvants
- * 3. Tuftsin

View All Answers

Question - 188:

What is immuno suppression?

Ans:

Immuno suppression is particularly given to the patients who are undergoing organ transplantation in the treatment of autoimmunity, graft rejection and in allergy conditions.

View All Answers

Question - 189:

Name some of the immuno suppressive agents.

Ans:

* Cytotoxic agents such as chlorambucil, cyclophosphamide, and azathioprine

- * Glucocorticoids
- * Cyclosporine
- * Antilymphocyte antibodies

View All Answers

Question - 190:

What is auto immunity?

Ans:

Disease caused by immunological reaction to self-antigen. Such type of diseases is classified either organ specific or non-organ specific. <u>View All Answers</u>

Question - 191:

What are hypersensitive reactions?

Ans:

If humoral or cellular immunity is switch on to high for length of time, tissue damage may occur. Such reactions are called hypersensitive reactions. <u>View All Answers</u>

Question - 192:

Name the scientists who classified hypersensitivity.

Ans:

Coombs and Gell



View All Answers

Question - 193:

What are iccosomes?

Ans:

The particles coated with immune complexes and are released from follicular dendritic cell extensions, are called as iccosomes.

Question - 194:

What is an incomplete antibody?

Ans:

Antibody can bind to an antigen but cannot induce agglutination is called incomplete antibody. <u>View All Answers</u>

Question - 195:

What is opsonin?

Ans:

Opsonin is a substance, which promotes phagocytosis of antigens by binding to them.

Question - 196:

What is a myeloma protein?

Ans:

It is a monoclonal immunoglobulin produced from a myeloma cell. <u>View All Answers</u>

Question - 197:

What is delayed hypersensitivity?

Ans:

We can recognize the Symptoms only days after exposure. This is delayed hypersensitivity (DTH). View All Answers

Question - 198:

What is hypersensitivity?

Ans:

The inflammatory response produced by inflammatory molecules result in tissue damage and some times even death. We call this as hypersensitivity or allergy. <u>View All Answers</u>

Question - 199:

What is anaphylaxis?

Ans:

It is most rapid hypersensitive reaction. It responds within minutes of applying a stimulus and can get localize. Reactions are mediated by release of pharmacologically active substances.

Question - 200:

Give the classification of hypersensitivity?

Ans:

- Hypersensitivity is classified into five types-
- * 1. Anaphylaxis
- * 2. Antibody dependant cytotoxicity
- * 3. Immune complex mediated diseases
- * 4. Delayed type 'o' cell mediated hypersensitivity* 5. Stimulatory hypersensitivity

5. Summatory r

View All Answers

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