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Class 12th

Subject BIOLOGY

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Questions and Answers

Differentiate the following and give examples of each

(a) Innate and acquired immunity

(b) Active and passive immunity

Ans: (a) Innate & acquired immunity

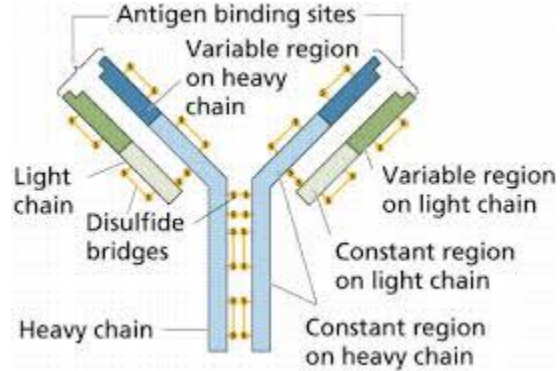
Innate immunity, also called inherent, natural, non specific immunity, comprises all those defence elements with which an individual is born & which are always available to protect a living body. It acts on many organisms and does not show specificity, e.g. Lysozyme present in secretions such as tears, catalyzes the hydrolysis of molecules in the cell walls of bacteria & interferon induces antiviral state in non infected cells. They act as physiological barriers & check the growth of many pathogenic micro-organisms. Acquired immunity, also called adaptive or specific immunity, is the immunity obtained either from the development of antibodies in response to exposure to an antigen, as from vaccination or an attack of an infectious disease or from the transmission of antibodies as from mother to foetus through the placenta.

(b) Active & passive immunity

Active immunity is acquired by catching & surviving an infectious disease or by vaccination with a weakened form of the disease which makes the body to form antibodies. Whereas passive immunity is conferred by transfer of immune products like antibodies etc. from other individual

. Draw a well-labelled diagram of an antibody

Ans:



10. What are the various routes by which trans-mission of human immunodeficiency virus takes place?

Ans: Various routes by which transmission of human immunodeficiency virus takes place are

- (i) Illicit sexual contact.
- (ii) Sexual contact with multiple partners.
- (iii) Transfusion of the blood of infected person.
- (iv) Intravenous drug users that shares needles are at high risk of contracting AIDS.

What is the mechanism by which the AIDS virus causes deficiency of immune system of the infected person?

Ans: HIV critically injures the immune system by infecting and eventually killing T-cells. Once the virus has infected a T cell, HIV copies its RNA into double stranded DNA copy by means of viral enzyme reverse transcriptase. This process is called reverse transcriptase because it violates the usual way in which genetic information is transcribed. Because reverse transcriptase lacks the proofreading function that most DNA synthesizing enzymes have, many mutations arise as the virus replicates, further hindering the ability of the immune system to combat the virus. These mutations allow the virus to evolve rapidly resulting in the loss of vital cells. As a result of progressive destruction of its T-cells, the body is easily ravaged by a number of common infectious agents. In many instances, these infections would have caused little injury if there were functional T-cells clones available.

Death ultimately results from the relentless attack of opportunistic pathogens or from the body's inability to fight off malignancies.

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