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Q1)Explain the role of immune system

Answer:The role of the immune system is to protect our body from any foreign matters that might cause any damage or homeostatis imbalance. The success of the immune system depends on its ability to discriminate between foreign(non self) and host(self) cells. When an organism is threatened by microorganisms, viruses, or cancer cells, the immune system acts to provide protection. Normally the immune system does not mount a response against self. This lack of an immune response is called tolerance.

When a foreign matter enters the human body, our defense system recognizes this as foreign through the immune system. How the human body recognize foreign against itself employs a complex "I.D." system. Each cell in the human body carries on it's surface a mixture of proteins and sugars that serve to identify the cell to the immune system. Foreign objects lack the identifiers that all of the body's cells have, but each one has unique features or antigens where the immune system attaches identifiers called antibodies. This is the basis for the specific defense mechanisms. Once you have built the antibodies for a specific antigen, the immune system will respond faster than if the had been no previous exposure to the antigen (i.e. you are immune to the pathogen, but only that specific pathogen, because your immune system responds faster.) The non-specific part of the immune system is mostly composed of phagocytes (eating-cells) which engulf and digest foreign substances like bacteria and viruses, which do not bear the body's specifc idenifers.

Q2)Describe the two types of immunity?

Answer: The two types of immunity are active and passive immunity .

Active immunityis the induction of immunity after exposure to an antigen. Antibodies are created by the recipient and may be stored permanently.

Active immunization can occur naturally when a microbe or other antigen is received by a person who has not yet come into contact with the microbe and has no pre-made antibodies for defense. The immune system will eventually create antibodies for the microbe, but this is a slow process and, if the microbe is deadly, there may not be enough time for the antibodies to be used.

Artificial active immunization is where the microbe is injected into the person before they are able to take it in naturally. The microbe is treated, so that it will not harm the infected person. Depending on the type of disease, this technique also works with dead microbes, parts of the microbe, or treated toxins from the microbe. A common example of this form of active immunization is vaccinations

Passive immunity:is the transfer of active humoral immunity of ready-made antibodies Passive immunity can occur naturally, when maternal antibodies are transferred to the fetus through the placenta and it can also be induced artificially, when high levels of antibodies specific to a pathogen or toxin (obtained from humans, horses, or other animals) are transferred to non-immune persons through blood products that contain antibodies, such as in immunoglubin therapy or antiserum therapy. Passive immunization is used when there is a high risk of infection and insufficient time for the body to develop its own immune response, or to reduce the symptoms of ongoing or immunosuppressive diseases.[]](https://en.m.wikipedia.org/wiki/Passive_immunity#cite_note-USC-2) Passive immunization can be provided when people cannot synthesize antibodies, and when they have been exposed to a disease that they do not have immunity against.

Q3) Explain the different types of antibodies and their roles

Answer:The 5 types – IgG, IgM, IgA, IgD, IgE – (isotypes) are classified according to the type of heavy chain constant region, and are distributed and function differently in the body.

1. IgG provides long term protection because it persists for months and years after the prescence of the antigen that has triggered their production.IgG protect against bacteris, viruses, neutralise bacterial toxins, trigger compliment protein systems and bind antigens to enhance the effectiveness of phagocytosis.
2. Main function of IgA is to bind antigens on microbes before they invade tissues. It aggregates the antigens and keeps them in the secretions so when the secretion is expelled, so is the antigen.IgA are also first defense for mucosal surfaces such as the intestines, nose, and lungs.
3. IgM is involved in the ABO blood group antigens on the surface of RBCs.IgM enhance ingestions of cells by phagocytosis.
4. IgE bind to mast cells and basophils wich participate in the immune response.Some scientists think that IgE’s purpose is to stop parasites.
5. IgD is present on the surface of B cells and plays a role in the induction of antibody production.