NAME: ADUGBO.E. JANET

MATRIC NO: 17/MHS03/002

QUESTIONS:

1. Explain the role of the immune system
2. Describe the two types of immunity
3. Explain the different types of antibodies and their roles

**Answers:**

1. The overall role of the immune system is to prevent or limit infections. The immune system can distinguish between normal, healthy and unhealthy cells by recognizing a variety of ‘danger’ signals called danger associated molecular patterns. Cells may be unhealthy because of infections; when the immune system first recognises these ‘danger’ signals, it responds to address the problem. The immune system is a host defence system compromising of many biological structures and process to protect against diseases. When an organism is threatened by microorganisms or any pathogens, the immune system acts to provide protection. The immune system recognises any foreign matters by a complex I.D System that all the cells carry on their surface, foreign matters lack this I.D systems so cells can easily identify foreign matters to enable faster response from the immune system.

**2. INNATE IMMUNITY :** This is the first line defence against non-self-pathogen or non-specific immune response. It consists of physical, chemical and cellular defences against pathogens. The main purpose of the innate immune response is to immediately prevent the spread and movement of foreign pathogens throughout the body. The innate immunity includes the external barriers of our body which is the first line of defence against pathogens; these external barriers include the skin and mucous membrane of the throat and gut.

**ADAPTIVE IMMUNITY:**  The second line of defence against non-specific pathogens. This is also referred to as acquired immunity or specific immunity and is only found in vertebras. This immunity is specific to the pathogen presented and protects us from pathogens that develop as we go through life. As we are exposed to diseases or get vaccinated, we build up a library of antibodies to different pathogens; this is referred to as immunological memory because our immune system remembers previous pathogens. Adaptive immunity can be divided into passive immunity (occurs when antibodies are passed from one person to another like in transfusions) and active immunity (involves white blood cells).

3) i**. IgG:** When most people think about antibodies, they mostly talk about this isotype. It is the antibody that is built by immunization. It activates an immune response that can eliminate some forms of infections and can neutralize certain toxins

ii. **IgA:** Found in usual mucosal areas, such as the mouth and the vagina. It can also be found in saliva, tears and breast milk. It is formed when two Ig subunits bound together. IgA can stimulate inflammation when it binds to a target. In mucosal areas, it can keep pathogens from stocking to epithelial cells.

iii. **IgM:** Is the first antibody to be produced after a pathogen has entered the body. It is made up of five Ig subunits bound together. IgM is very important in early stages of an infections, it sometimes appears when an infection becomes reactivated such as herpes outbreak. It can also appear when someone is re-exposed to a disease they’ve previously gotten rid of. IgM sticks very strongly to its target.

iv**. IgE:** Is the antibody that is responsible for the allergic response. It is mostly found in the lungs, skin and mucous membranes. When IgE binds to an allergen, it starts the histamine reaction. It’s the histamine reaction that causes the symptoms of an allergic attack. This single subunit antibody also helps to protect the body from parasitic worms.

v. **IgD:** Is important in the early stages of the immune response. It does not circulate but instead, it signals cells to become active and this can help stimulate inflammation. Its functions are still being discovered.