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Mechanism of infection by the human immunodeficiency virus (HIV)

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The human immunodeficiency virus (HIV) is a lentivirus (a subgroup of retrovirus) that causes HIV infection and over time acquired immunodeficiency syndrome (AIDS). The HIV of lethal viruses is severely specialized immune system infecting virus especially infecting the T- helper cells (CD4+ T cells). Where it works by break downing the defenses of the infected person because the T-helper cells serve as the beating heart of the immune system by helping the immune system to deliver signals to the rest of the immune cells and allow life-threatening opportunistic infections and cancers to thrive. Two types of HIV have been characterized: HIV-1 and HIV-2. HIV-1 is the virus that was initially discovered and termed both LAV and HTLV-III. It is more virulent, more infective and it is the cause of most HIV infections globally. The estimated number of people infected with the disease since the beginning of the epidemic is almost 78 million people who have been infected with the HIV virus and about 39 million people who have died of HIV. The genetic material of this virus is positive single-stranded RNA (+ssRNA) and infection occurs after entry of the virus into the body. Then the virus attacks the T- helper cells through receptor association, GP 120 which exists on the surface of the virus and receptor called CD4 exists on the surface of the T-helper cells. After the virus linked to the receptor of the CCR5 on the surface of the T-helper cells, the other receptor links to the receptor of the GP120 called GP41 making holes in the plasma membrane through which the virus enters into the infected cell. After the entry, virus removes its outer shell, takes new cover of the host cell, and converts the genetic material from RNA to DNA through a unique enzyme called reverse transcriptase and injects its genetic material into the genetic material of T-helper cells. According to my point of view, the virus here is more intelligent; through infecting T-helper cells it cuts the link between the macrophage and B-cells by eliminating T- cells.

Biography

Ahmed Ali Hussein has completed his Master's degree in Microbiology and Immunology from the University of Qadisiyah - College of Science. He has published number of research papers in local and international journals. He has a book about Immunology titled "Medical Immunology". He was assigned to supervise many undergraduate and graduate students for obtaining a Diploma degree.

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