

Hepadnaviruses Encyclopedia Article

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Hepadnaviruses

Hepadnaviridae is a family of hepadnaviruses comprised by two genera, *Avihepadnavirus* and the *Orthohepadnavirus*. Hepadnaviruses have partially double strands **DNA** (partial dsDNA virion) and they replicate their genome in the host cells using reverse transcriptase and are therefore, termed **retroviruses**. Their virion DNA, invades the hepatocytes (i.e., liver cells) of vertebrates, which are their natural hosts. When hepadna retroviruses invade a cell, a complete viral dsDNA is made before its random integration in one of the host's **chromosomes**, and is then transcribed into an intermediate messenger **RNA** (mRNA) into the hosts' **nucleus**. The viral mRNA then leaves the nucleus and undergoes reverse transcriptase, mediated by a viral reverse transcriptase enzyme that transcribes complementary strands of complementary dsDNA in the cell cytosol, thus forming new partial dsDNA virions.

Orthohepadnavirus is the pathogenic agent that causes chronic **hepatitis** (Hepatitis type B) in mammals, which may eventually lead to either cirrhosis or liver cancer if not detected and treated. Hepatitis B Virus or HBV, the prototype member of the family Hepadnaviridae, is transmitted by both infected blood (blood transfusions, grafts) and body fluids (usually through sexual relations with infected partners). HBV comprises several viral species that also infect the liver cells of orangutans, dogs, and other mammalians besides man. Vaccines for both human Hepatitis B and several forms of animal Hepatitis B (lions, cats, dogs) are available as a form of disease prevention. All Hepadnaviridae **viruses** have a high affinity with liver cells (hepatotropy) and the viruses of the genus *Avihepadnavirus*, also known as avian hepadnaviruses, have as targets the liver of birds, such as storks, ducks, herons, etc.