













Retrovirus A retrovirus is a single-stranded RNA virus that employs a double-stranded DNA (dsDNA) intermediate for replication. The RNA is copied into DNA by the enzyme reverse transcriptase. The dsDNA is integrated into the host chromosomes, from which it is transcribed to produce the viral genome and proteins that form new viral particles.













HIV is a Lentivirus

- · Lentiviruses are retroviruses.
- HIV is a retrovirus that belongs to the class of lentiviruses.
- Other lentiviruses infect nonhuman species.
 - Example
 - Feline immunodeficiency virus (FIV) infects cats
 - Simian immunodeficiency virus (SIV) infects monkeys and other nonhuman primates.

FIV and SIV

- Like **HIV** in humans, these animal viruses primarily infect immune system cells, often causing immunodeficiency and AIDS-like symptoms. These viruses and their hosts have provided researchers with useful, albeit imperfect, models of the HIV disease process in people.
- Humans inherited **HIV** from chimpanzees and mangabeys and since then, HIV has diversified and continues to do so.



 env encodes the structural protein that surrounds the virus. This protein is necessary for the virus to leave the cell to infect other cells.



HIV The human immunodeficiency virus (HIV) is the virus that causes acquired immune deficiency syndrome (AIDS). HIV moves from person to person when a bodily fluid containing the virus, usually blood or semen, carries

the virus from an infected person directly onto a mucous membrane or into the bloodstream of an uninfected person.



HIV Transmission

- The **HIV virus** can be transmitted during heterosexual sex, homosexual sex, oral sex, needle sharing, transfusion with contaminated blood products, childbirth, and breastfeeding.
- The **HIV virus** has spread via different routes in different regions since first recognized by medical professionals in 1981.

What is HIV?

- Like all viruses, **HIV** is an intracellular parasite.
- It is incapable of an independent life and is highly specific in the cell types it afflicts.
- HIV parasitizes components of the human immune system: macrophages and T cells.
- HIV uses the enzymatic machinery and energy found in these cells to make copies of itself, killing the host cells in the process. http://www.niaid.nih.gov/factsheets/howhiv.htm

Macrophages and T Cells

- Macrophage a large immune system cell that devours invading pathogens and other intruders. Stimulates other immune system cells by presenting them with small pieces of the invaders.
- **CD4+ T cells** white blood cells that orchestrate the immune response, signaling other cells in the immune system to perform their special functions. Also known as T helper cells, these cells are killed or disabled during HIV infection.

























