

HIV and AIDS

World Aids Day
December 1, 2009

History of AIDS

- 1981 Large number of cases of Kaposi's cancer in the US
- 1983 HIV was identified as the virus that causes AIDS

HIV

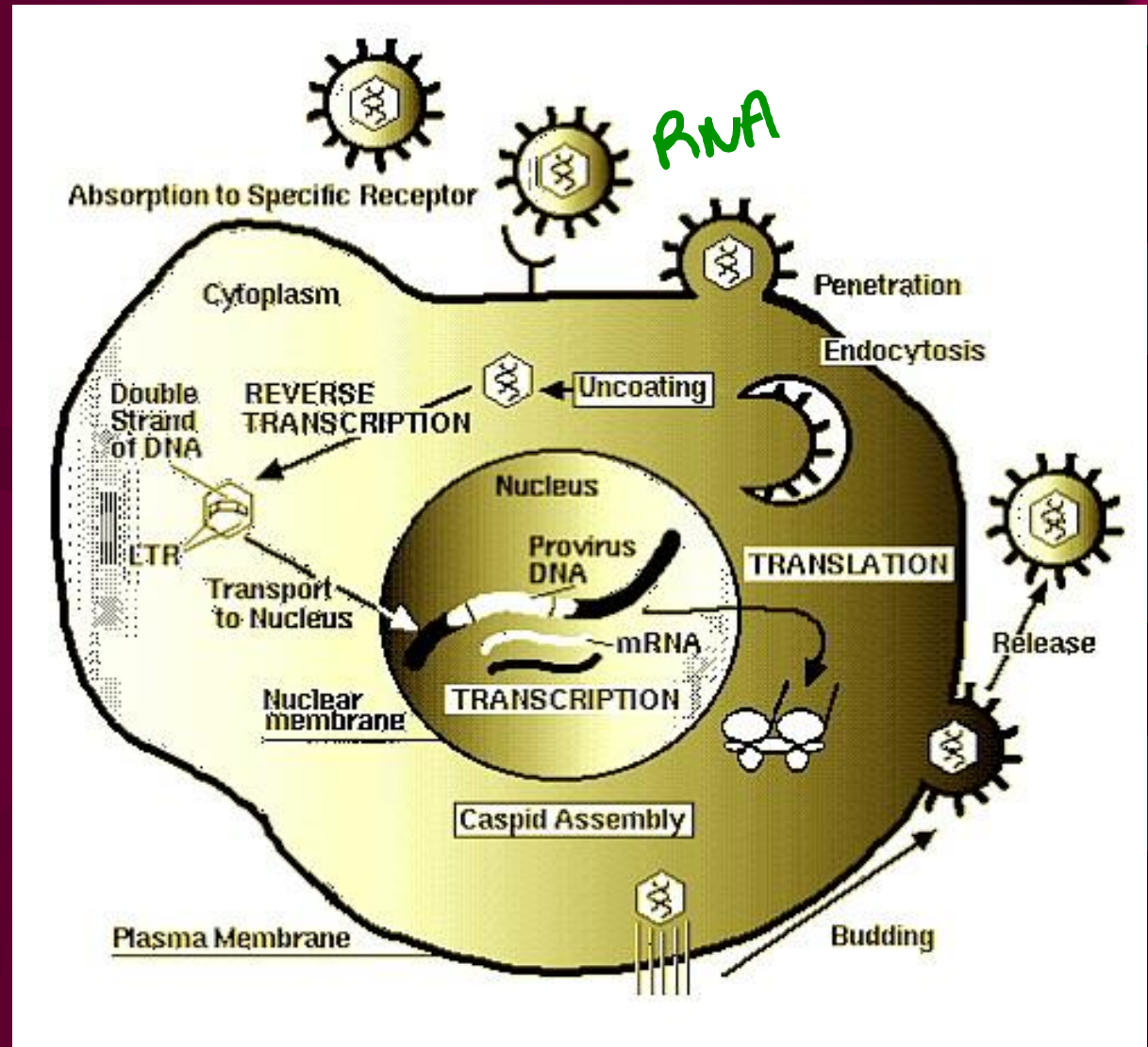
- http://www.youtube.com/watch?v=mzfnxC_Esck4

HIV: A retrovirus



Receptors:
CD4 molecules

Coreceptors:
fusin, CCR5



•Retroviruses (RNA Virus)

Retroviruses have an enzyme that is capable of turning their RNA into DNA. This viral DNA can then be integrated into the host cell's genome.

Retroviruses replicate with a high mutation rate. This increases it's ability to evolve and survive.

Steps:

1. Viral RNA enters the host cell along with the enzyme reverse transcriptase
2. Reverse transcriptase copies the viral RNA into DNA
3. Then the new viral DNA is integrated into the host cell's genome

<http://www.youtube.com/watch?v=eS1GODinO8w> (more descriptive)

- <http://www.youtube.com/watch?v=dn1tNlrMPRk&feature=related> (simple video clip)

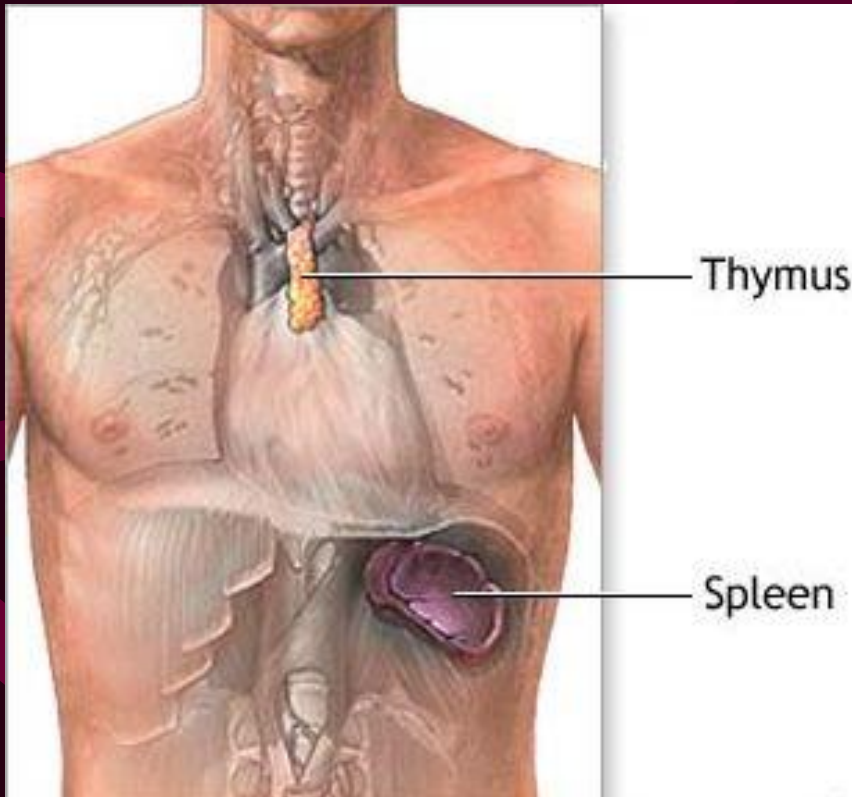
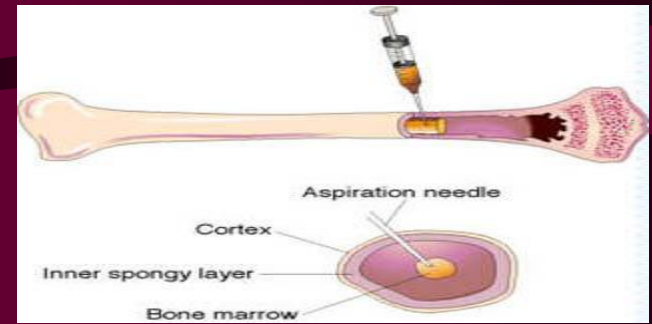
Pathology of HIV

- Two major strains: HIV-1 and HIV-2
- HIV primarily infects helper T cells in the immune system
- Helper T cells normally trigger other white blood cells to make antibodies

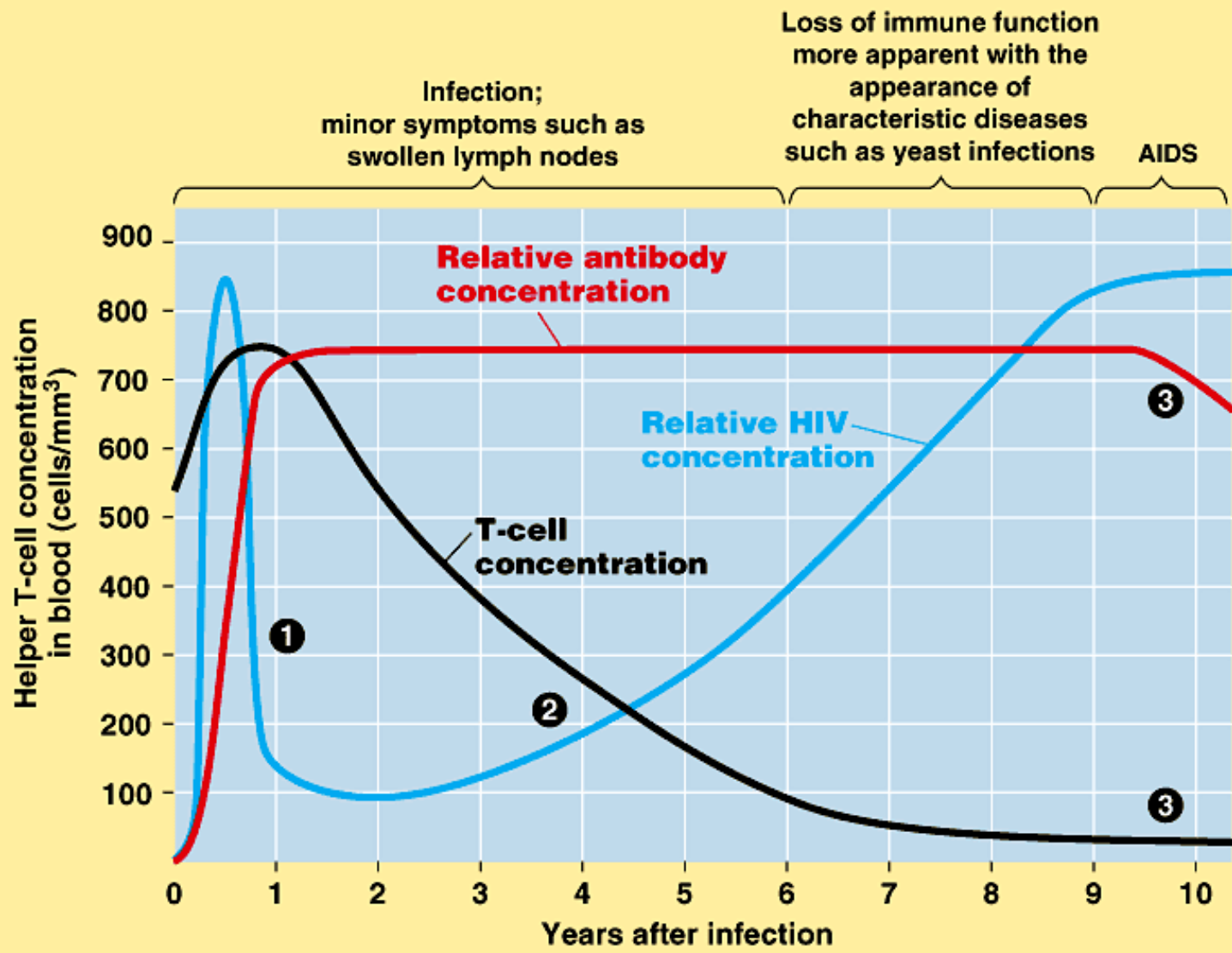


Campbell Fig. 43.19

T-Cells



- T-cell is a type of white blood cell (leukocytes)
- The thymus is responsible for maturing the T-cells to fight infections.
- “T” stands for thymus



Challenges with AIDS vaccines

- HIV is a retrovirus which integrates viral DNA into host DNA
- HIV has a high rate of mutations
- HIV attacks the body's defense system