Treatment and problems faced

While there is currently no cure for AIDS, treatments are available to help prolong the life of a patient and also to suppress the symptoms of AIDS at later stages. In many places like British Colombia, free antiretroviral drugs are available to patients whose CD4+ cell counts are below a certain threshold [5], and in the market there are about 30 different drugs with different names such as “The Cocktail”, or “Highly Active Antiretroviral Therapy (HAART)”, split into a total of 5 different classes of drugs, with each class attacking the virus at different stages of its life cycle [6] [9]. The different class of drugs helps to combat HIV through the following means:

- **Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)** which help to block the replication process of HIV by attacking the genes involved in reverse transcriptase usage, inhibiting the enzyme. [Examples include Abacavir, Lamivudine, Tenofovir and Didanosine [7]]
- Non **Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (nNRTIs)** serve the same function as above but instead of the gene, inhibits the reverse transcriptase directly. [E.g. Delvaridine, Efravirenz, Nevirapine]
- **Protease Inhibitors** inhibit the proteases that shorten the translated proteins required for the HIV replication process, rendering them useless. [Examples include Amprenavir, Indinavir, Ritonavir and Saquinavir]
- **Entry/fusion inhibitors** inhibit the HIV entry into the cell or from fusing with the cell membrane. [e.g. Enfuvirtde]
- **Integrase Inhibitors** prevent integration of the viral DNA into the individual’s own DNA, which helps to block further replication of viral DNA in the cell.

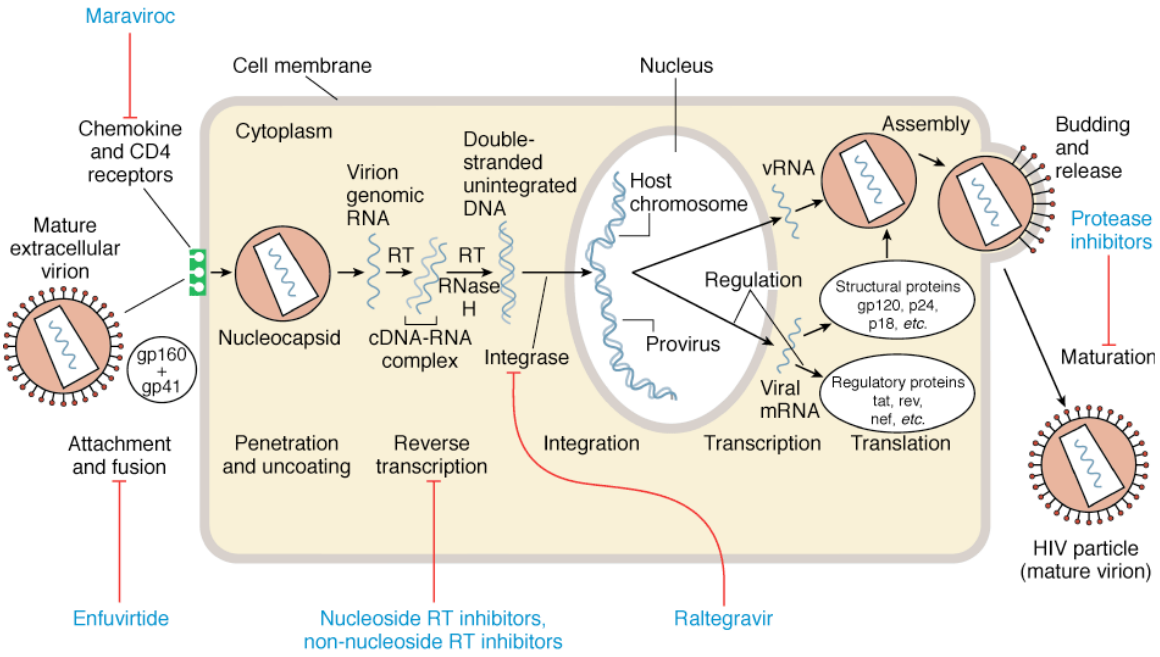

Figure 3: Replicative cycle of HIV-1 showing the sites of action of available antiretroviral agents

AIDS is hard to cure for now due to the fact that it is hard to detect especially if in the incubatory period, and also because the genetic makeup of HIV is ssRNA (Single stranded RNA), which makes it extremely prone to mutations and genetic changed. Hence, it is difficult to pinpoint target sequences for cures as the RNA sequences are constantly changing [8]. Also, due to the lack of knowledge it is hard to tell whether potential cures can cause other problems in the patient, e.g. cancer [10].