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Virus Replication

Viruses are obligate intracellular parasites, which means they cannot replicate outside of living cells and are entirely reliant on the cell to replicate. Viruses infect all types of organisms, including animals, plants and even bacteria. To replicate, a virus must infect a cell, which is referred to as a host cell. The virus will use the host cell's machinery and metabolism as a factory to create more viruses. When the viruses are completed they are released to continue the cycle. A virus can remain dormant until it finds its next host cell to repeat the process over again.

There are six basic steps to viral replication:

1. **Attachment/Adsorption**- The first step of infection is the virus's attachment to the surface of the cell. On the outside of cells and viruses are proteins called receptors, which act like a lock and key system. A specific virus usually infects a specific cell type, so the virus only has a key for the unique lock on that cell. The virus cannot infect a cell without the appropriate receptors.

2. **Penetration**- The virus enters the cell by passing through the cell membrane, which is the outside layer of the cell. How the virus penetrates the cell can vary depending on the virus type.

3. **Uncoating**- The virus then unpacks its contents and loses the outer layer shell known as the capsid.

4. **Biosynthesis**: Once inside, viruses use various combinations of cell and virus machinery for genome replication and gene expression. The virus uses the host cell to create new pieces of viral proteins and genetic material such as DNA or RNA depending on the virus type.

5. **Assembly-** The virus particles are put together like pieces of a puzzle and new viruses are created. The virus is now ready to be released.

6. **Release**- The virus is released from the cell due to cell lysis which disrupts the cell membrane or wall and results in cell death. Another process called budding uses the host cell's membrane to exit the cell.

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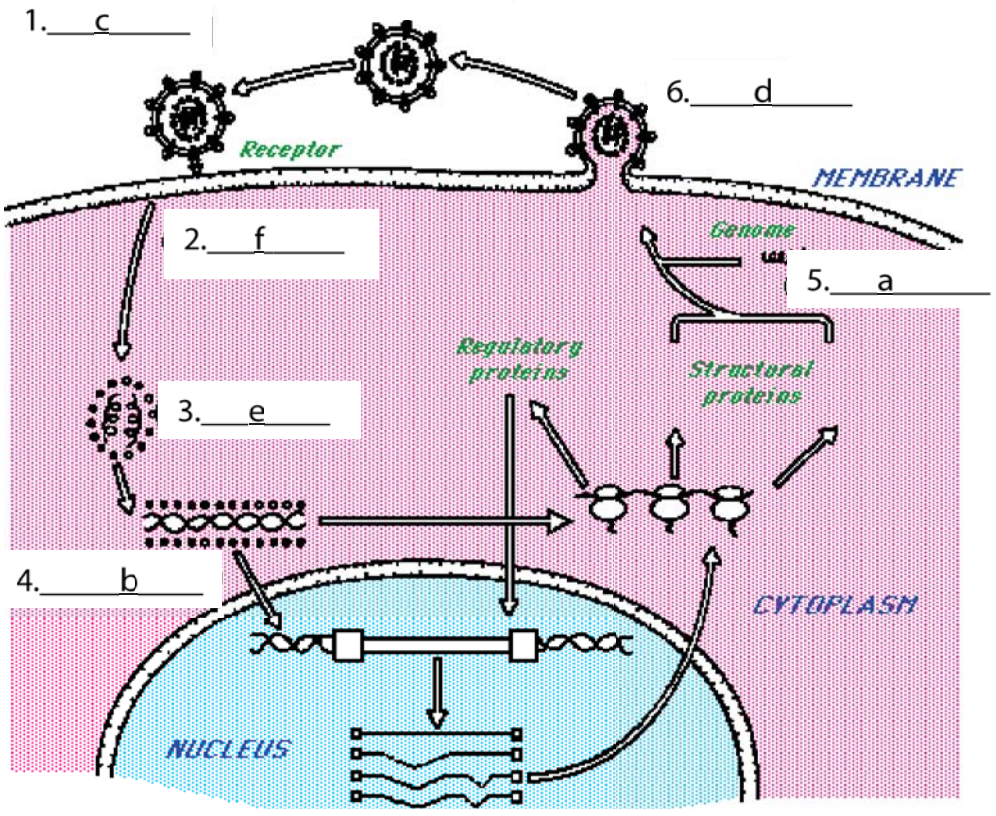
Study the virus replication diagram below and read the steps of viral replication. Match each description to its appropriate replication step.

a) The pieces of the virus are assembled
b) New pieces of viral proteins and genetic material such as DNA or RNA are produced.
c) The virus attaches to the cell membrane of the host cell.
d) The virus is released from the cell due to cell lysis or budding.
e) The virus then unpacks its contents and loses the outer layer shell known as a capsid.
f) The virus enters the cell.



Source: http://virology-online.com/general/Replication.htm