

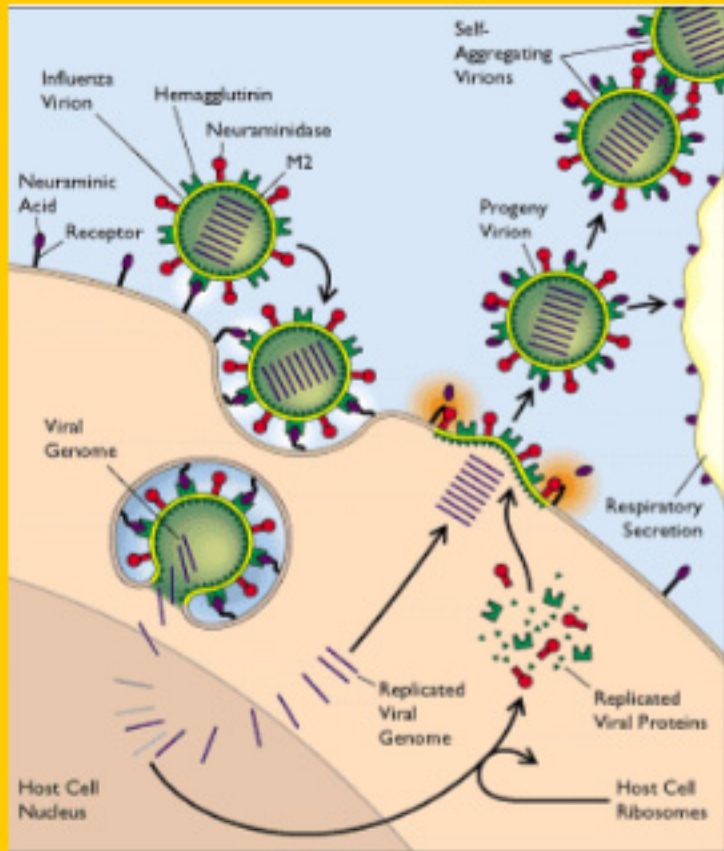
Smallpox



Herpes



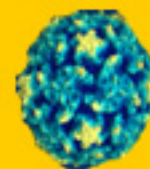
Influenza



## Viruses

Viruses are extremely small (.02-.2 micron), non-cellular particles consisting of short strands of RNA or DNA surrounded by a protein coat that usually assumes a simple geometric shape. They are non-living because they don't have the cellular components necessary to synthesize their own proteins or conduct metabolism to generate energy. Consequently, they can't replicate by themselves; they need to attach and gain access to a host cell in which their DNA or RNA utilizes the host cells cellular machinery to synthesis more of its DNA or RNA and proteins for its coat. These self-assemble into new virus particles that are released when the cell ruptures. They are almost all pathogenic (cause disease) and cause disease by destroying cells after replication and by provoking an inflammatory response in the host. Viruses are unaffected by antibiotics.

Polio



SARS



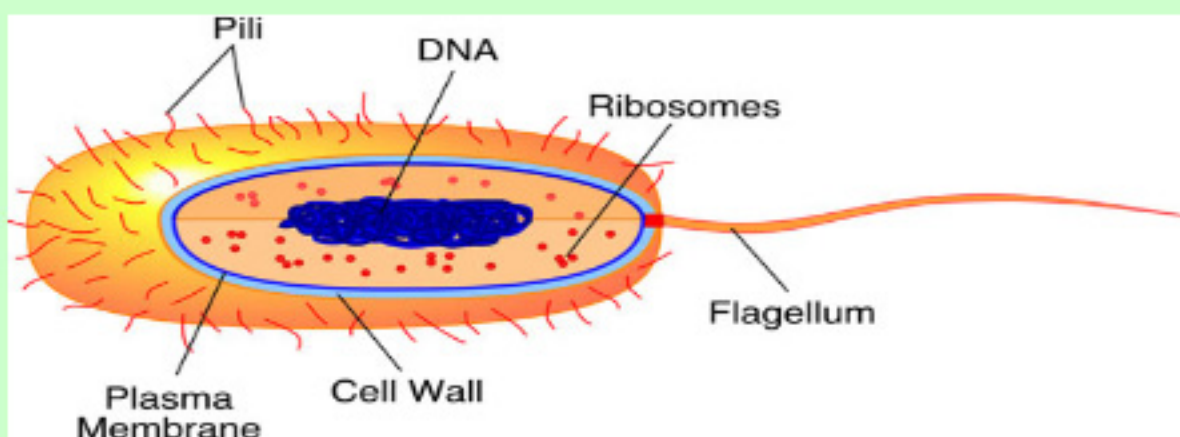
HIV



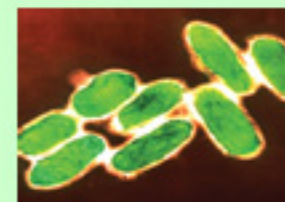
E. coli

## Bacteria

Bacteria are primitive cells (prokaryotes) that are about 50 times larger than viruses (0.5-5 microns). They have a ring of DNA that has more genes than viruses. They have a cell membrane and an outer cell wall. Unlike viruses, bacteria can derive energy from nutrients they absorb and they can synthesize cellular components and reproduce independently. Only about 5% of bacteria cause disease, and these do so by causing destruction of cells, by releasing toxins, or by provoking an inflammatory response in the host.



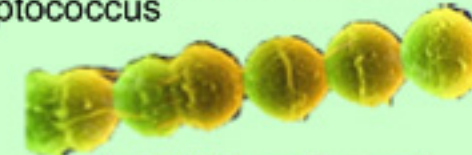
Plague bacillus



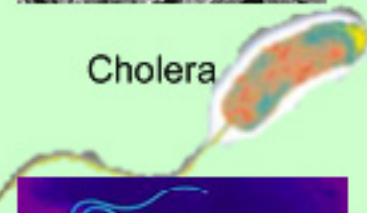
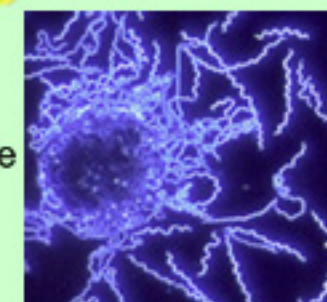
Staphylococcus



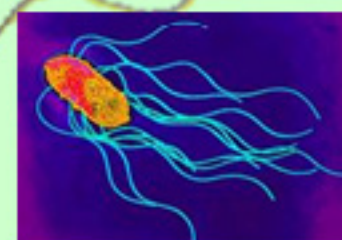
Streptococcus



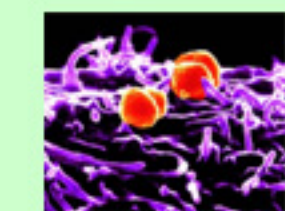
Lyme disease



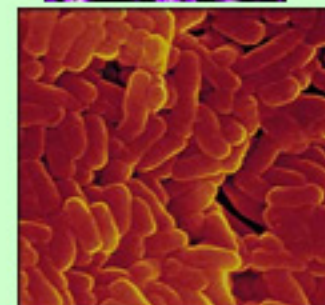
Cholera



Salmonella



Gonorrhea

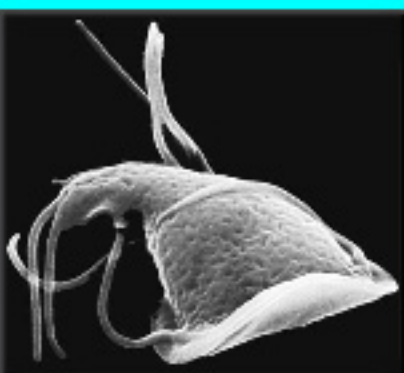


TB

## Protozoans

Protozoans are also one-celled organisms, but they are larger than bacteria and have a more complex cell structure.

Giardia



Trypanosomiasis (sleeping sickness)



Malaria infecting red blood cells.

