

•20.1 Viruses

- Discovery of Viruses
 - A **virus** is a nonliving particle made of proteins, nucleic acids, and sometimes lipids.
 - Viruses can reproduce only by infecting living cells.
 - Most viruses are so small they can only be seen with the aid of a powerful electron microscope.
- Viral Infections
 - What happens after a virus infects a cell?
 - Inside living cells, viruses use their genetic information to make multiple copies of themselves. Some viruses replicate immediately, while others initially persist in an inactive state within the host.
- Lytic Infections
 - In a lytic infection, a virus enters a bacterial cell, makes copies of itself, and causes the cell to burst, or lyse.
- A Closer Look at Two RNA Viruses
 - About 70% of viruses contain RNA rather than DNA
 - In humans, RNA viruses cause a wide range of infections, from relatively mild ones to severe cases of HIV
 - Certain kinds of cancer also begin with an infection by viral RNA
- The Common Cold
 - Cold viruses attack with a very simple, fast-acting infection. A capsid settles on a cell, typically in the host's nose, and is brought inside, where a viral protein makes many new copies of the viral RNA.
 - The host cell's ribosomes mistake the viral RNA for the host's own mRNA and translate it into capsids and other viral proteins.
 - The new capsids assemble around the viral RNA copies, and within 8 hours, the host cell releases hundreds of new virus particles to infect other cells.

20.2 Prokaryotes

- Classifying Prokaryotes
 - The smallest and most abundant microorganisms on Earth are prokaryotes- unicellular organisms that lack a nucleus.
 - Prokaryotes have DNA, like all other cells, but their DNA is not found in a membrane-bound nuclear envelope as it is in eukaryotes. Prokaryote DNA is located in the cytoplasm.
 - They are in two groups Bacteria and Archaea, both are their own domain.
- Bacteria
 - Bigger than Archaea
 - Have a strong cell wall

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