**Virus Article**

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| A *virus*is a small, infectious parasite that replicates inside the living cells of another organism (Fig. 1.4 D). Viruses possess genetic material (DNA or RNA) and evolve by natural selection. However, viruses do not have a cellular structure, do not maintain homeostasis, and cannot reproduce on their own. Because they lack the ability to maintain homeostasis and lack cellular organization, viruses are not considered cells. Viruses are instead referred to as particles. Virus particles are enclosed within a protein shell called a capsid. Genetic information is contained within the capsid and is needed for viral replication. Viruses cannot replicate themselves. They must use a host cell’s machinery to make the proteins necessary for new viral particles. Some viruses, called retroviruses, contain a single strand of RNA (instead of DNA) and must incorporate their genetic material into the host cell genome in order to reproduce. Sometimes, pieces of viral genome remain in the host genome after infection. These viruses are known as endogenous retroviruses. It is estimated that the average person’s genome contains about eight percent viral genetic material. Most viruses are small, but some viruses are relatively large, with even more genetic material than bacteria (which do have cellular organization). Opinions still differ as to whether viruses are truly alive, and scientists continue to debate whether viruses should be acknowledged as living things. However, there is little doubt among scientists that viruses are an important part of the microbial biota and that viruses have the ability to affect living organisms on this planet. Indeed, viruses are the most abundant organisms in the ocean and make up most of the genetic diversity. Marine viruses play a major role in biogeochemical cycling in the ocean and can influence the community composition of marine organisms. |  |

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