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| **Following the Big Ideas** |
| **Big Idea 1** | Viruses can introduction variation into the genetic material of a host, which can lead to rapid evolutionary change |
| **Big Idea 3** | Disruptions in ecosystems can expose plants and animals to different viruses which can affect the health of organisms and potentially the whole popluation |
| **Big Idea 4** | Viral replication is unique in that it is dependent on the cellular machinery of the host |

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| **Essential Questions** |
| * What are the characteristics of life?
* Are viruses considered alive?
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| **Vocabulary** |
| 1. Caspid
2. Capsomeres
3. Viral tail fibers
4. Viral head
5. Viral sheath
6. Viral genome
7. obligate intracellular parasites
8. Host range
 | 1. Bacteriophage
2. Virulent phage
3. Temperate phase.
4. Restriction enzyme
5. Prophage
6. Lysogenic phase
7. Lytic phase
8. Retrovirus
 | 1. Reverse Transcriptase
2. Plasmid
3. Transposon
4. Pandemic
5. Horizontal transmission
6. Vertical transmission
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| **Chapter Outline and Reading Guide** |
| **Section 1** 1. What was some early evidence of the existence of viruses? Why were they difficult to study?
2. What are the four forms of viral genomes?
3. What is the role of an envelope in animal viruses?

**Section 2** 1. What property of a virus determines its attachment to a host cell membrane?
2. Compare the host range for West Nile virus to that of the human cold virus.
3. What components of the host cell does a virus use to reproduce itself?
4. How does a DNA virus reproduce its genome?
5. Explain the 4-step process of viral reproduction.
6. What portion of a phage enters the host cell? How does it do this?
 | 1. How do restriction enzymes they help prevent viral infection of bacteria?
2. Why don’t restriction enzymes destroy the DNA of the bacterial cells that produce them?
3. What are three ways bacteria may win the battle against the phages?

**Section 3**1. What are three ways that viruses make us ill? Why do we recover completely from a cold but not from polio?
2. What tools are in the medical arsenal against human viral diseases?
3. Emerging viruses such as HIV, Ebola, and SARS seem to burst upon the human scene. What are three processes that contribute to this sudden emergence?
4. How do viruses spread throughout plant bodies?
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| **After You Have Read…**  |

* What properties suggest viruses are not alive?
* What properties of viruses suggest they are alive?
* How do viruses affect organisms in terms of their individual health and evolution of species?