

CHAPTER 19

VIRUSES

Learning objectives

The Genetics of Viruses

1. Recount the scientific investigations that led to the discovery of viruses. Include the contributions of Adolf Mayer, Dimitri Ivanowsky, Martinus Beijerinck, and Wendell Stanley.
2. List and describe the structural components of viruses.
3. Explain why viruses are obligate intracellular parasites.
4. Explain how a virus identifies its host cell.
5. Describe bacterial defenses against phages.
6. Distinguish between the lytic and lysogenic reproductive cycles, using phage λ as an example.
7. Which viral genes are expressed during the prophage stage? Explain the significance of prophage gene expression in the lysogenic cycle and to viral disease.
8. Describe the reproductive cycle of an enveloped virus.
9. Describe the reproductive cycle of an HIV retrovirus.
10. List some characteristics that viruses share with living organisms and explain why viruses do not fit our usual definition of life.
11. Define and describe mobile genetic elements. Explain why plasmids, transposons, and viruses are all considered mobile genetic elements.
12. Describe the evidence that viruses probably evolved from fragments of cellular nucleic acids.