

Name \_\_\_\_\_

## The Genetics of Bacteria and Viruses Answer Key

1. Plasmids are small, circular DNA molecules found in bacteria that can carry additional genes, such as those responsible for antibiotic resistance.
2. No, viruses cannot undergo genetic recombination as bacteria do. They can only undergo mutations in their own genetic material.
3. In transformation, bacteria can take up free DNA from their environment and incorporate it into their own genome.
4. No, viruses do not have cellular structure. They are composed of genetic material (DNA or RNA) enclosed in a protein coat called a capsid.
5. Flagella are whip-like appendages that enable bacteria to move and navigate their environment.
6. No, viruses are highly specific in their choice of host cells. They can only infect cells that have specific receptors that match their attachment proteins.
7. Conjugation is a process in which two bacteria temporarily join and transfer genetic material (plasmids) from one bacterium to another through a pilus.
8. Yes, viruses can be classified into different groups based on whether they have DNA or RNA as their genetic material and the different strategies they use to replicate.
9. Yes, some bacteria are extremophiles and can survive and thrive in extreme environments such as hot springs, acidic environments, and deep-sea hydrothermal vents.
10. Yes, viruses can cause both acute infections, where symptoms develop and resolve quickly, and chronic infections, where the virus persists in the body for a long time.