Name:

**Chapter 8 & 9 Genetics & Biotechnology Review Questions**

Types of Gene Transfer

1. What is the difference between horizontal and vertical transfer of genes?

Vertical Transfer

1. Through what process are genes vertically transferred in bacteria?

Horizontal Transfer

1. Fill in tables below regarding forms of horizontal gene transfer.

|  |  |  |  |
| --- | --- | --- | --- |
| Types of Horizontal Transfer | Definition (Description of process) | Examples/Uses | Limitations |
| Transformation |  |  |  |
| Conjugation |  |  |  |
| Transduction |  |  |  |

|  |  |
| --- | --- |
| Types of Horizontal Transfer | Diagram (Show how the process works/steps)In each label: Vector , Source of transferred gene (human, plant, bacterial), and the resulting product (a protein for harvest or modified organism/plant). |
| Transformation |  |
| Conjugation |  |
| Transduction |  |

1. Fill in the table below regarding the terms related to genetic engineering of bacteria.

|  |  |  |
| --- | --- | --- |
| Term | Definition | Function in Genetic Engineering |
| DNA ligase |  |  |
| Restriction enzyme |  |  |
| Clone |  |  |
| Plasmid |  |  |
| Bacteriophage |  |  |
| Marker |  |  |
| Vector |  |  |
| Competency |  |  |
| Sticky ends |  |  |
| Blunt ends |  |  |

1. E. coli and Saccharomyces are both commonly engineered to make human proteins. What advantage does Saccharomyces sometimes have over the use of E.coli?

Lab #28 Conjugation:

1. There were 2 resistant genes in the lab. Were both genes transferred to the other bacteria? Why or why not?

Lab #29 Transformation:

1. Define and explain the relationship between genotype and phenotype in the “Glow in the Dark” lab.
2. What components of the lab caused the E.coli to take up the plasmid?
3. Why was the amp-r gene necessary in this lab? Explain.

The “paper” plasmid lab: Make sure you understand how to answer questions similar to the ones on this lab sheet. If you missed questions, ensure you know why and can fix them.

1. How do you identify restriction enzyme sites on a given piece of DNA if given the enzyme recognition sequence?
2. What is the natural function of restriction enzymes?
3. In the following diagrams, you need to identify the following:
	1. Vector
	2. Source of transferred gene – human, plant, bacterial
	3. Process involved: transformation, conjugation, transduction, reproduction
	4. Resulting product - whether a protein for harvest or modified organism/plan





1. In the following diagrams, you need to identify the following:
	1. Vector
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	4. Resulting product - whether a protein for harvest or modified organism/plan





Plasmid Genes

1. Fill out the table below regarding plasmids.

|  |  |  |
| --- | --- | --- |
| Type of Gene | Purpose of Gene | Example |
| Conjugative |  |  |
| Dissimilation |  |  |
| R-Factors |  |  |