

Unit 9: Biotechnology & Genetic Engineering

<http://mrspiger.weebly.com/>

Chapter 13 pages 358-85

Unit 9 Essential Questions

- What are examples of biotechnology?
- What is genetic engineering?
- How do we understand the function of genes?

Checklist for Understanding

CAN you...

- Identify examples of selective breeding.
- Explain how genes are inserted into a plasmid.
- Explain the steps in PCR.
- Explain how recombinant DNA works.
- Interpret a DNA fingerprint - both for paternity and criminal investigation.
- Identify several uses for genetic engineering.
- Compare the pros and cons for cloning.
- Debate the advantages and disadvantages of manipulating DNA.
- Give examples of GMOs.
- Identify several uses for gene therapy.
- Discuss how genomics has helped us understand how genes work.

Unit 9 Vocabulary Study online at https://quizlet.com/_19rrmq

1.	cloning	process where the DNA from an organism is used to create a genetic copy of that organism (Dolly)
2.	DNA fingerprinting	separating an individual's unique sequence of DNA fragments to observe distinct banding patterns; can be used by forensic scientists to identify suspects and determine paternity
3.	DNA ligase	enzyme that puts together (glues) DNA fragments together
4.	DNA microarray	silicon chips or microscope slides with DNA fragments that can allow many genes in a genome to be studied simultaneously
5.	gel electrophoresis	process that involves using electric current to separate DNA fragments by size
6.	gene therapy	technique to correct mutated disease-causing genes
7.	genetic engineering	technology used to manipulate an organism's DNA by inserting DNA of another organism
8.	genome	total DNA in each cell nucleus of an organism

9.	genomics	study of an organism's genome
10.	plasmid	any of the small, circular, double-stranded DNA molecules that can be used as a vector (usually from bacteria)
11.	polymerase chain reaction (PCR)	genetic engineering technique that can make copies of specific regions of a DNA fragment
12.	recombinant DNA	newly generated DNA fragment containing foreign DNA
13.	restriction enzyme	enzyme that cuts DNA into fragments at a specific sequence
14.	transformation	process in which bacterial cells take up recombinant plasmid DNA
15.	transgenic organism	organism that is genetically engineered by inserting a gene from another organism (aka GMOs)

For each term, provide an example and or description in your own words.

cloning	
DNA fingerprinting	
DNA ligase	
DNA microarray	
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genomics	
plasmid	

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