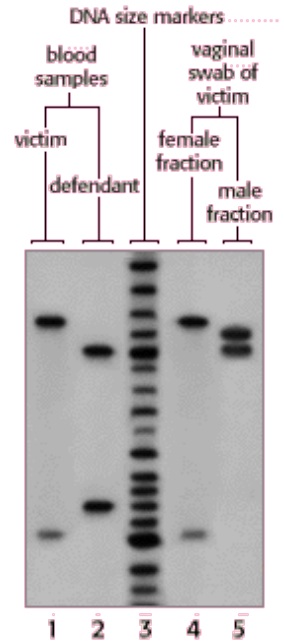


EOC Review Part 6

Patterns of Inheritance (Biotechnology and Evolution)

Biotechnology

To the right is an electrophoresis gel showing evidence from a rape case. Could the defendant be the rapist? Explain your answer.



If the longest fragments are at the top of the gel, where is the positive charge?

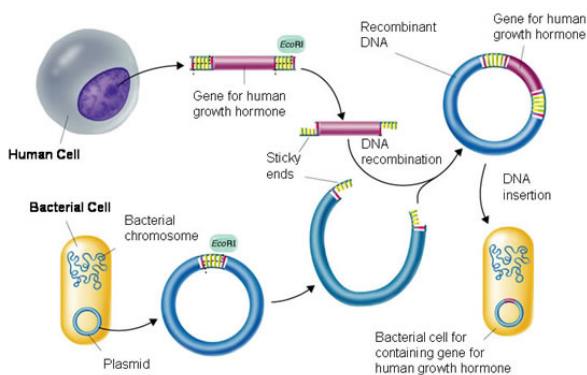
Because DNA has a _____ (+ or - ?) charge, which way will it go in a gel?

Which size fragments move the fastest? Explain why this leads to bands in the gel.

What other ways can DNA fingerprinting be useful?

What are the goals of the Human Genome Project, and what can it be used for?

What is a restriction enzyme?



Look at the picture to the left, which describes the process of altering bacteria to produce human insulin. What is the value of this recombinant DNA technology?

What is a transgenic organism?

Evolution

Discuss the steps in Darwin's theory of Natural Selection:

(1) Individuals differ, and some of these differences can be inherited. Where do the differences come from?

(2) Organisms produce more offspring than can survive. Why don't all survive?

(3) The most fit organisms pass on their heritable traits to their offspring. What does "fit" mean?

In the table below, describe the role of each of the following in developing the current theory of evolution:

	Importance to evolutionary theory
Understanding of geology (changes in the earth)	
Malthus' ideas about population growth	
Anatomical comparisons	
Patterns in fossil evidence	
Lamarck's ideas about inheritance of acquired characteristics	
Biochemical comparisons (DNA and proteins)	
The role of variations	
The role of sexual reproduction	
The role of geographic isolation	
The importance of the environment	

Genetic variations lead to different adaptations. What are adaptations?

What are homologous structures? Name two body parts in two different animals that are homologous.

What is a vestigial structure? Name a few in humans.

What is geographic isolation?

What is reproductive isolation?

Populations of organisms have many genetic variations. Where do these come from?

What is speciation?

Describe how a population of insects can become resistant to a pesticide.