Advanced (Honors) Biology
Mrs. Senegar-Mitchell

Name_____

CHAPTER 12 – DNA Technology and the Human Genome

Chapter Reading Guide

1. Define and compare the processes of transformation, transduction, and conjugation. Explain why bacterial mating is **NOT** reproductive.

Transformation	Transduction	Conjugation

2. Describe the roles of bacterial F factors. Define a plasmid and explain why R plasmids pose serious human health problems.

3. Explain how restriction enzymes are used to "cut and paste" DNA.

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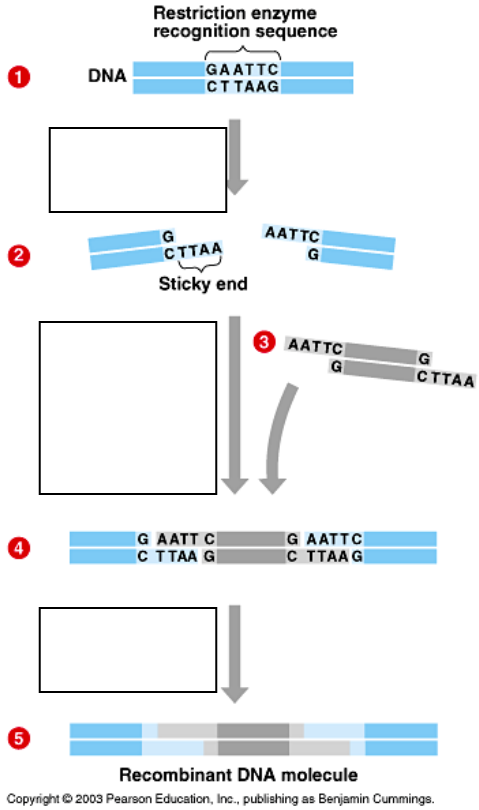
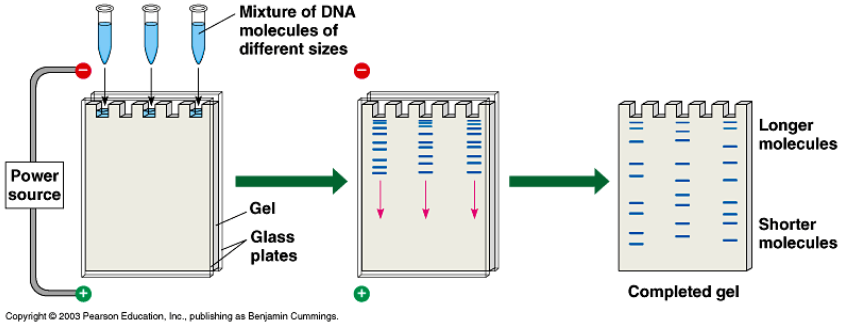


Name_____

4. Describe the process used to produce many copies of a desired gene.

5. Explain how gel electrophoresis is used to sort DNA.



6. Explain how restriction fragment analysis is used to detect differences in DNA sequences.

7. Explain how polymerase chain reactions work and how this process is useful to biologists.

8. Describe the three overlapping stages of the Human Genome Project. Explain why it is important to also sequence the genomes of other organisms.

9. Explain how DNA fingerprinting is used in making identifications.

10. Explain how DNA technology has helped to produce insulin, growth hormone, and vaccines.

11. Describe the recent efforts in human gene therapy. Discuss the ethical issues that these techniques present.

12. Describe the ethical dilemmas associated with DNA technology and increased knowledge of the human genome.

Name_____

The PCR Song **Brought to you by the fine scientist at…**

There was a time when to amplify DNA,
You had to grow tons and tons of tiny cells.

Then along came a guy named Dr. Kary Mullis,
Said you can amplify in vitro just as well.

Just mix your template with a buffer and some primers,
Nucleotides and polymerases, too.

Denaturing, annealing, and extending.
Well it's amazing what heating and cooling and heating will do.

PCR, when you need to detect mutations.
PCR, when you need to recombine.
PCR, when you need to find out who the daddy is.
PCR, when you need to solve a crime.

(repeat chorus)

Check out the PCR Song Music Video at:

http://bio-rad.cnpg.com/lsca/videos/ScientistsForBetterPCR/