

Chapter 12 – *DNA Technology and the Human Genome*  
EXAM REVIEW

Bacteria can transfer DNA via conjugation, transformation, and transduction. Match the following statements with one of the methods of bacterial DNA transfer. (Some statements are true of all methods of DNA transfer.) {Modules 12.1-12.2}

- A. Conjugation \_\_\_\_\_ 1. What happened in Griffith’s experiment with pneumonia bacteria
- B. Transformation \_\_\_\_\_ 2. DNA may be integrated into chromosome of recipient
- C. Transduction \_\_\_\_\_ 3. Taking up of DNA from the fluid surrounding a cell
- D. All three of the above \_\_\_\_\_ 4. Alters genetic makeup of recipient cell
- \_\_\_\_\_ 5. Figure 5 below
- \_\_\_\_\_ 6. Male and female cells joined by sex pili
- \_\_\_\_\_ 7. Figure 7 below
- \_\_\_\_\_ 8. Bacterial “mating”
- \_\_\_\_\_ 9. Figure 9 below
- \_\_\_\_\_ 10. Creates a recombinant cell
- \_\_\_\_\_ 11. Transfer of genes by a bacteriophage
- \_\_\_\_\_ 12. May involve transfer of genes by a plasmid
- \_\_\_\_\_ 13. Usually controlled by a piece of DNA called an F factor
- \_\_\_\_\_ 14. 1920’s discovery that harmless bacteria could be transformed
- \_\_\_\_\_ 15. Involving “male” and “female” donors

Figure 5

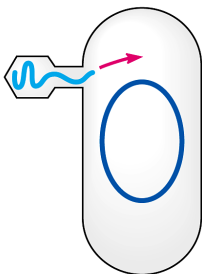


Figure 7

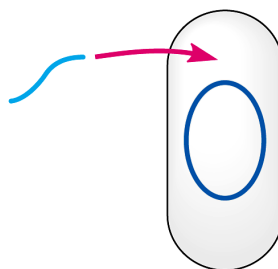
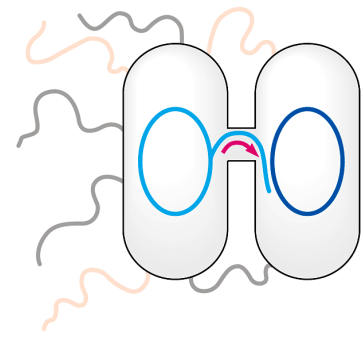


Figure 9



Review recombinant DNA techniques by matching each of the diagrams (or parts of diagrams) below with one of the following processes: **isolating plasmid from E. coli; extracting DNA from a eukaryotic cell; obtaining copies of gene and protein from cloned bacteria; cutting DNA with restriction enzyme; joining plasmid and DNA fragment using DNA ligase; cloning recombinant DNA; using reverse transcriptase to make an artificial gene; using a nucleic acid probe to find a gene; inserting a plasmid into a bacterium via transformation; and mixing plasmids and DNA fragments with sticky ends.** {Modules 12.3-12.8}

Powerful molecular biology techniques now allow us to amplify, analyze, and compare genes. Review these methods by matching each phrase on the right with a term on the left. Terms may be used more than once or not at all. {Modules 12.9-12.12}

- A. restriction fragment analysis \_\_\_\_\_ 1. Transferring DNA to paper so it can be exposed to a probe
- B. carrier \_\_\_\_\_ 2. Used to cut up DNA for analysis
- C. DNA microarray \_\_\_\_\_ 3. Piece of DNA cut up by restriction enzymes
- D. recognition sequence \_\_\_\_\_ 4. Place where enzymes cleaves DNA
- E. positive pole \_\_\_\_\_ 5. Used to find bands with particular DNA sequences
- F. restriction fragment \_\_\_\_\_ 6. Type of cell often used in restriction fragment analysis
- G. DNA polymerase \_\_\_\_\_ 7. Separates DNA fragments by size and electrical charge
- H. DNA probe \_\_\_\_\_ 8. Restriction fragments move through this
- I. blotting \_\_\_\_\_ 9. Restriction fragments are attracted to this
- J. white blood cell \_\_\_\_\_ 10. Where specific restriction fragment collects in gel
- K. band \_\_\_\_\_ 11. Chromosomal "landmark" that can be studied
- L. restriction enzyme \_\_\_\_\_ 12. Comparing restriction fragment patterns
- M. genetic marker \_\_\_\_\_ 13. Method for making many copies of a DNA molecule
- N. gel electrophoresis \_\_\_\_\_ 14. Used to replicate DNA in a test tube for PCR method
- O. polymerase chain reaction (PCR) \_\_\_\_\_ 15. Heterozygote who might possess a harmful allele
- P. gel

Summarize Module 12.13 on Barbara McClintock's work with "jumping genes" in *exactly* 25 words. **Remember summaries are NOT found, they are made.....so no quotes from the textbook.** You **MUST** use your own words. Please number each word of the final draft of your summary and use the back of this page for your composition. {Module 12.13}