

HBS 1.3 Study Guide

Name: _____

1. Draw and label a DNA nucleotide.
 - a. Label the Carbon molecules in the sugar

2. What are pyrimidines? Purines? Indicate which N bases are which.

3. What is the shape of DNA?

4. How is DNA organized? Draw it.

5. What is the charge of DNA? Due to what part of the nucleotide?

6. Which Nitrogen bases pair together? How?

7. What are the roles & responsibilities of a forensic anthropologist?

8. What are the roles & responsibilities of a DNA analyst?

9. What is gel electrophoresis? How does it work?

10. What are restriction enzymes?

11. How do DNA fragments separate?

12. Define RFLP's.

13. What is a DNA fingerprint?

Restriction Enzyme Practice

Directions: Identify the [restriction sites](#) for each of the examples given. Show the cuts, [sticky ends or blunt](#), number of DNA fragments produced and the number of base pairs in each (count the top row). (If there are three nucleotides on either side of the dash it is a blunt cut. If there are fewer than three bases on either side of the dash it produces “sticky ends” cut.)

Remember: Analyze in the 5' → 3' direction

1. *Hind*III

5' ACGACGTAGTCGAAGCTTATTAT GTCGACCCGCCGCGTCGACCATCA 3'
3' TGCTGCATCAGCTTCGAATAATACAGCTGGGCGGCGCAGCTGGTAGT 5'

HindIII Recognition Site:

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____

2. *Eco*RI

5' ACGACGTATTAGAATTCTTAT CCGCCGCCGGAATTCT CATCA 3'
3' TGCTGCATAATCTTAAGAATAGGCGGCGGCCTTAAGAGTAGT 5'

EcoRI Recognition Site:

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____

3. *Hae*III

5' ACGCCGGCCGTATTAT CCGGATCCGCCG CCGGCTGTCCCGGATCA 3'
3' TCGCGCCGGCATAATAGGCCTAGGCGGCGGCCGACAGGGCCTAGT 5'

HaeIII Recognition Site:

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____

4. *Bam*HI

5' ACGCCTAGGATCCGTATTATCCTAGGTAT CCGCCGCCGT CATCA 3'
3' TCGGATCCT AGGCATAATAGGATCCATAGGCGGCGGCAGTAGT 5'

BamHI Recognition Site:

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____

5. *Hind*III and *Hae*III

5' ACGGTCGACACGTATTATTAAGCTTCGACT CCGGCCGCCGGCCGGTCATCA 3'
3' TGCCAGCTGTGCATAATAATTCGAAGCTGAGGCCGGCGGCCGGCCAGTAGT 5'

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____

6. *Hind*III, *Hae*III, and *Bam*HI

5' ACGCCGGATCCGTACCT AAGCTTTAGTCGACTC GGCCG CCCCTAGGGTCATCA 3'
3' TCGGCC TAGGCATGGATTCGAAATCAGCTGAGGCCGGCGGGGATCCCAGTAGT 5'

- Number of pieces of DNA _____
- Size of fragments from largest to smallest: _____