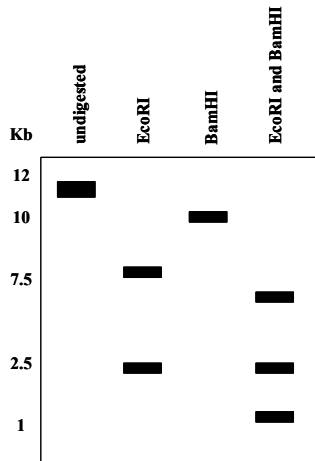


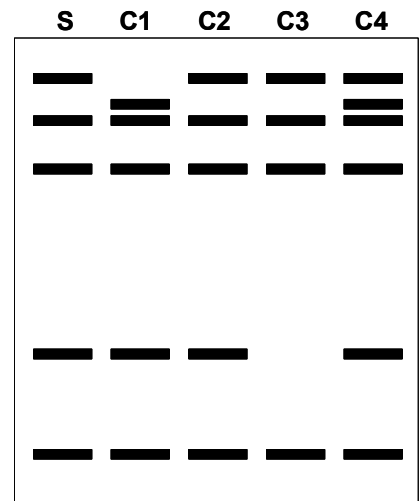
INS WORKSHOP 04-14-08 HOMEWORK DUE NEXT WEEK: Ch 11 CONCEPTUAL REVIEW
QUESTIONS AND THESE WORKSHOP QUESTIONS (NOT THE CROSSWORD) ON ANOTHER PIECE OF PAPER .

1. You are interested in amplifying the entire region of DNA shown below. Write sequences, clearly indicating polarities, of PCR primers that could allow the amplification of the entire region (“...” indicates omitted sequence).
 3’-AACAGCCTTCTCTCCGTCGCCACATCTGTC...TACCAACCTTCTTTCCGCTTCCCCTACAATC-5’



2. You digest a plasmid with the restriction endonucleases BamHI and EcoRI, both individually and then together, in three separate reactions. You run the digests on an electrophoresis gel, the results of which are shown to the left. Sketch a plasmid with the BamHI and EcoRI restriction sites in the appropriate order, and indicate distances.

3. You have obtained a DNA sample from a suspect of a crime. PCR is used to amplify multiple regions of DNA from the suspect’s genome (S) and from other samples from crime scenes (C1-4). The resulting gel electrophoresis pattern is represented to the right.



A) Assume that the samples from the crime scenes were uncontaminated—that is, each sample is from a single individual. Which of the crime scenes could possibly be linked with the suspect? Be sure to explain your reasoning.

B) Do not assume that the samples from the crime scenes were uncontaminated—that is, each sample could involve multiple individuals. Which of the crime scenes could possibly be linked with the suspect? Be sure to explain your reasoning.

4. Assume that you have a lot of DNA from the suspect and crime scene samples in question 3. Describe how restriction fragment length polymorphisms (RFLPs) can be used to identify a unique individual.

5. Describe how Dideoxy sequencing works.

6. You are studying Protein X and would like to know if the protein is expressed in liver cells of mice. How would you do this? Be very specific and include all appropriate controls.

7. How do Southern, Northern, and Westerns differ? How are they similar?

8. Describe how gene therapy can be used to treat patients with Severe Combined Immunodeficiency patients.

ACROSS

3. Determining the order of bases in a nucleic acid or the order of amino acids in a peptide.
6. Circular extrachromosomal DNAs; frequently used as tools in molecular biology.
8. Used to examine patterns of inheritance in a family tree.
11. Relatively short piece of nucleic acid that provides a 3' end for extension.
12. Introduction of foreign DNA into a cell.
13. General name of the enzyme required for PCR.
14. Synthesized in the laboratory using reverse transcriptase.
15. Technique for amplifying a region of DNA using a thermal cyclcr.

DOWN

1. Technique for examining where nucleic acids are located in a cell or organism.
2. Produces a magnified image, allowing small structures to be observed.
4. A replica of an organism or a gene.
5. Bacterial enzyme that cuts a DNA molecule at a specific sequence.
7. Separates molecules based on differences in charge and size.
9. Involves the hybridization of a DNA or RNA probe to DNA blotted from an electrophoresis gel.
10. Treatment of a disease by the introduction of new alleles into an individual.

