DNA Technology
Chapter 20

1. Explain how a restriction enzyme can be used to create recombinant DNA.
2. Outline a procedure for cloning a gene using a bacterial plasmid.
3. When using a plasmid vector to clone a gene, how can bacteria carrying the gene be identified?
4. Describe the polymerase chain reaction. Give an example of when it might be useful and identify the limitation.
5. Explain how gel electrophoresis can be used to separate and visualize DNA fragments.
6. How can restriction fragment length polymorphisms be used as genetic markers?
7. Describe the technique of Southern blotting and give an example of when it might be useful.
8. Describe the dideoxy chain-termination method of sequencing DNA.
9. Why is cDNA rather than genomic DNA used when cloning a gene?
10. Outline the steps in cloning a gene.
11. a) How can we identify protein-coding sequences in DNA?
b) How can we determine the function of a gene?
c) Why is this information useful?
12. Imagine you want to know which genes are expressed in a particular embryonic tissue compared to the same tissue in the fetus and the adult. How would you do this?
13. How might you identify which bacteria in a culture have been transformed?
14. How might DNA technology be used:
a) to identify the carrier of a disease-causing allele?
b) in forensic applications?
c) in the genetic modification of organisms?
d) for gene therapy?
15. Briefly outline some ethical and environmental concerns surrounding the use of DNA technology.