

Answer on a separate paper Be very specific and detailed

1. Refer to chapter 9

A recent discovery of a suspected ancient life form in a Precambrian rock strata has a lab staff buzzing. They discovered pieces of DNA that when analyzed had the following sequence of nucleotide bases:

TACTTTTGGACGGAGGCGTCGTTTTGTGCCTGCTTCACATTA

- A. Give the base sequence for the complimentary strand of DNA
- B. Give the base sequence for the mRNA which would be transcribed from the original strand of DNA
- C. From fig. Pg. 264 (check text), give the sequence of amino acids coded for by the mRNA
- D. If the strand of DNA had been exposed to UV light and the underlined base was deleted, how would that change the amino acid sequence?

TACTTTTGGACGGAGGCGTCGTTTTGTGCCTGCTTCACATTA

- E. In the following, if the underlined base was replaced by guanine, what would happen to the mRNA and the resulting amino acid sequence?

TACTTTTTGGACGGAGGCGTCGTTTTGTGCCTGCTTCACATTA

2. From chapter 10: Define the following terms

1. Recombinant DNA technology
2. Biotechnology
3. Restriction enzymes
4. Polymerase chain reaction
5. Transformation
6. Reverse transcriptase
7. Gel electrophoresis
8. Gene therapy
9. DNA fingerprinting
10. Gene cloning

3. List 3 important medical advances that have resulted from recombinant DNA technology. For each advance, give a practical application of how this advance might directly affect you or a close family member.

4 See page 293 in chapter 10. Why do you think that the DNA polymerase used in the illustration from class notes was derived from the bacteria *Thermus aquaticus*?

5. Using the internet, newspaper or other documented resources, give me a referenced example of genetic engineering. What was the source of the original genetic material? How has the material been reproduced and then introduced into another living system. What are the benefits of the engineering advance? Are there any dangers presented by this recombinant DNA? (you must include the source of your information – your opinion on benefits and dangers are yours alone, but please include them – some of this science is controversial.) **** **Please no articles on Dolly the sheep, cloned kittens or genetically engineered corn - get new stuff******