Bio I
Study Guide: Protein Synthesis

1. Explain the relationship between DNA and genes.
2. What are the three differences between DNA and RNA? Explain each.
3. What are the three components of a RNA nucleotide? Which one of these components do both DNA and RNA nucleotides share?
4. Fill in the table with the appropriate information dealing with the two stages of protein synthesis:

	Brief summary	*Organelles found in process*	*Location of Reaction*
Transcription			
Translation			

5. The process of transcription can be broken down into three main steps. List and explain each of these.
6. Explain the difference between the template and non-template strand of DNA. Which strand is used in transcription?
7. What enzyme is involved in transcription? What is its role?
8. Why is the term translation appropriate for describing the process of making RNA?
9. List two ways that transcription is similar and different to DNA replication.
10. Why are the nitrogenous bases of mRNA kept in groups of three? What do we call these groups?
11. Examine the diagram below. Fill in the blanks with the appropriate terms. Choices include the following: tRNA, amino acid, protein, codon, anticodon, mRNA, ribosome.

12. What is the relationship between a gene and a protein?
13. Why is the term translation appropriate for describing the synthesis of proteins?
14. Where can an anticodon be found?

15. Which of the following are complementary to each other: DNA template, tRNA, DNA nontemplate, and mRNA.
16. Using the DNA non-template listed below, give the amino acid sequence for this message.

ATG GGG CTA CTT CAT GAT TTC CCG CAA AAG AAA CTC ATC

17. Fill in the table with the appropriate information:

Type of RNA	Function	Present in Transcription/Translation
tRNA		
mRNA		
rRNA		

18. Examine the diagram below. Label each of the blanks with one of the following terms: nucleotide, deoxyribose, phosphate group, nitrogen base, hydrogen bonds and base pair.

19. List the three components of a DNA and RNA nucleotide.