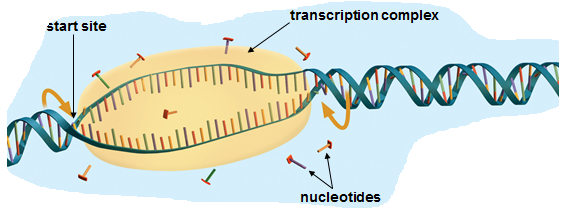
**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_**

**Protein Synthesis Test Review**

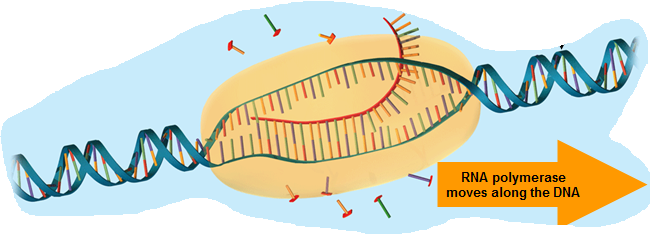
1. Protein synthesis is the process of making a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by using instructions from DNA. A section of DNA is called a \_\_\_\_\_\_\_\_\_\_ and each codes for a particular protein.
2. RNA acts as an intermediate link between DNA in the nucleus and protein synthesis in the cytoplasm. Like DNA, **RNA** (ribonucleic acid ) is a \_\_\_\_\_\_\_\_\_ of nucleotides. **RNA differs from DNA in three significant ways. *Make a T chart comparing DNA and RNA***

* ***Indicate in your T chart the location of DNA and RNA***

1. **List** and briefly **describe** the function of the **3** types of RNA.
2. During **transcription**, a section of DNA (gene) unwinds and is copied into what type of RNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Where in the cell does transcription occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What enzyme is involved in this process?



1. **Refer to diagram below and label the DNA molecule and the mRNA.**
2. **In your own words describe what is happening in this step of Transcription. Use the following words in your description: RNA nucleotides, complementary base pairs (A,U,G,C), DNA template,RNA polymerase**



**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Suppose you had the following DNA segment being transcribed. What would the mRNA look like according to base pairs?

**(DNA) ATT - ACC- GGT- GAT- AAA**

**(mRNA) \_\_\_\_ \_\_\_\_ \_\_\_ \_\_\_\_ \_\_\_\_**

1. During translation, the information from the mRNA is used to make a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The mRNA moves from the \_\_\_\_\_\_\_\_\_\_\_ to the cytoplasm where it will bind to a \_\_\_\_\_\_\_\_\_\_\_ (organelle).

1. What is a **codon? Indicate on the diagram below a DNA triplet.**

**Indicate on the diagram below a codon.**

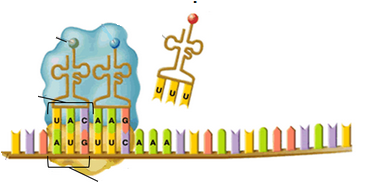
**How many triplets are shown? \_\_\_\_**

**How many codons are shown? \_\_\_\_**

 **How many amino acids will form from the**

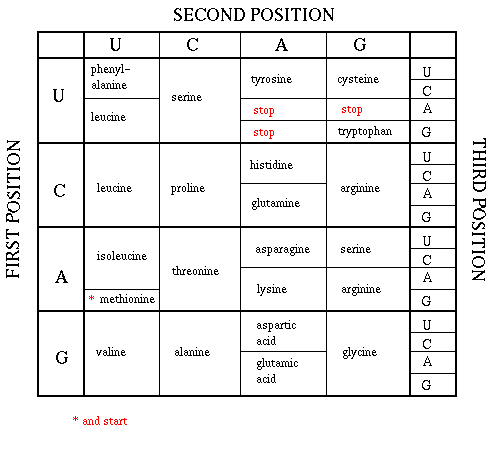
**section of RNA? \_\_\_\_\_**

1. **During translation, the mRNA attaches to the ribosome at the \_\_\_\_\_\_\_\_\_codon. Each codon will code for \_\_\_\_\_\_ amino acid. Next, the anticodon of a tRNA molecule will attach to the \_\_\_\_\_\_ of the mRNA. The tRNA carries an \_\_\_\_\_\_\_\_ \_\_\_\_\_\_ that is specific to the codon on the mRNA strand.**
2. **Refer to diagram below and label the following: *tRNA, amino acid, codon, anticodon, ribosome***



1. tRNA molecules continue to attach to the mRNA and bring amino acids which are bonded together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds . **Explain what will happen when a stop codon is reached?**

**Use a codon chart from your notes and answer questions 13-15.**



1. What is the amino acid coded for by the codon **GGU**? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the amino acid coded for by the codon **CCU**? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What codon will **STOP** a polypeptide chain? \_\_\_\_\_\_
4. What is cell differentiation?

17. Give an example of a type of cell that has not become specialized yet.

18. Explain what happens once a cell differentiates.

19. In two or three sentences, explain **“Gene Expression”**

20. In two or three sentences, explain the role of **DNA** and the role of **RNA** in gene expression.

21. List **4 environmental factors** that can influence what genes are expressed.

22. A gene mutation is a \_\_\_\_\_\_\_\_\_\_\_ in the DNA sequence.

**a. Point Mutations-**

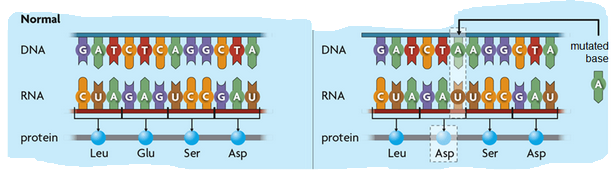
**b. Frameshift Mutations-**

23. Which type of mutation will usually only affect one amino acid and are caught and corrected by

DNA polymerase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24. Which type of mutation involves every amino acid after the mutation?

25. Which type of mutation is shown below: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



26. Which type of mutation is shown below: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

