

Name: _____

RNA PRACTICE—WORKSHEET

Complete the statement using one of the following terms:

Ribose	Adenine	Nucleus
Phosphate	Uracil	Cytoplasm
Nitrogenous base	Guanine	Transfer RNA
Transcription	Cytosine	Nucleotides
Ribosomal RNA	Messenger RNA	
Thymine	Translation	

1. The sugar found in RNA is called _____.
2. In RNA, guanine bonds to _____.
3. This nitrogenous base is not found in RNA _____.
4. This type of RNA brings amino acids to the ribosome during translation
_____.
5. Transcription takes place in the _____.
6. In RNA, adenine bonds to _____.
7. This type of RNA makes up the ribosome and is the site of protein synthesis
_____.
8. This process is also known as protein synthesis _____.
9. The monomers of RNA are _____.
10. Protein synthesis takes place in the _____.
11. This type of RNA carries the instructions for making proteins
_____.

Central Dogma – Transcription

1. Which nitrogenous bases are found in DNA?
2. Which base is found in RNA but not DNA?
3. In which part of a cell does transcription occur?
4. Describe two ways in which RNA differs from DNA.
5. When making mRNA, adenine bonds to which base?

Use the DNA below to transcribe the mRNA strands.

6.	DNA	C	G	T	A	C	G	T	C	A	G
	mRNA										
7.	DNA	G	A	C	A	G	T	C	A	G	A
	mRNA										
8.	DNA	A	T	G	A	C	C	C	A	G	G
	mRNA										
9.	DNA	A	T	G	A	C	C	A	T	G	A
	mRNA										
10.	DNA	A	G	G	A	T	T	C	A	C	A
	mRNA										

Use the mRNA strands below to reverse transcribe the DNA.

11.	DNA										
	mRNA	G	G	U	A	C	U	A	C	C	G
12.	DNA										
	mRNA	U	C	C	A	C	G	U	U	A	G
13.	DNA										
	mRNA	C	A	U	U	U	G	A	C	A	U
14.	DNA										
	mRNA	A	A	C	G	G	U	A	G	C	U
15.	DNA										
	mRNA	U	G	G	A	C	A	U	A	A	U

Name: _____

RNA PRACTICE—WORKSHEET #5

Protein synthesis is a complex process made up of the 2 processes **transcription** and **translation**. In this activity you will trace the steps that are involved in protein synthesis.

A. Transcription

Protein synthesis begins with DNA in the nucleus. Transcription takes place in the nucleus of the cell. During transcription messenger RNA (mRNA) reads and copies DNA's nucleotide sequence in the form of a complimentary RNA strand. Then the mRNA carries the DNA's information in the form of codons to the ribosome. Codons are a 3 nucleotide sequence in an mRNA strand. At the ribosome, amino acids will be assembled to form a polypeptide, which will become a protein.

Below is a DNA sequence. Write the sequence of mRNA codons that would result from the transcription of the DNA sequence.

DNA: 1 2 3 4 5 6 7 8 9 10
 ACA ATA TAG CTT TTG ACG GGG AAC CCC ATT

mRNA: _____

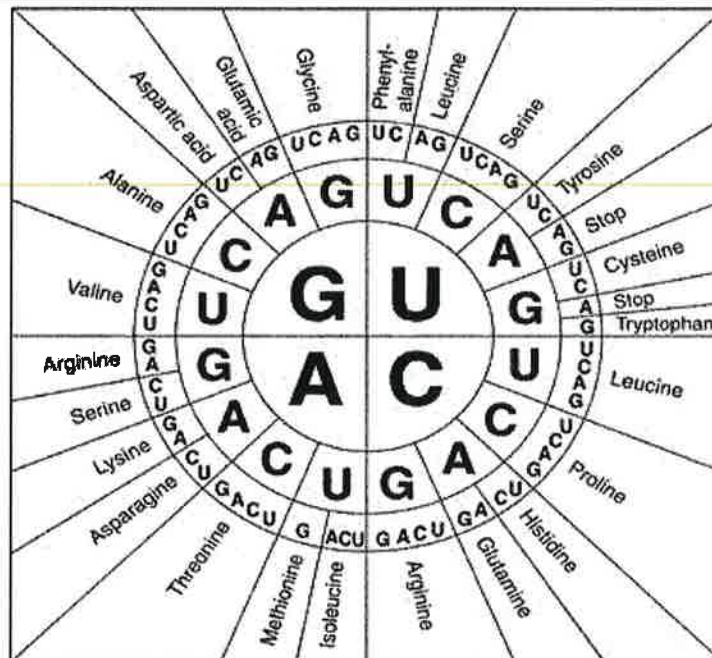
B. Translation

Translation takes place on the ribosome. For translation, another type of RNA called transfer RNA (tRNA) is needed. tRNA is a molecule made up of 3 nucleotides called anticodons. Anticodons are complimentary to the codons of mRNA. Attached to the tRNA anticodons are amino acids. During translation a tRNA anticodon will bind to a specific mRNA codon and bring with it the specific amino acid coded for. As tRNA bring amino acids, the amino acids bond together forming polypeptide chains, which will form proteins.

Rewrite your mRNA sequence from part A. Using the amino acid chart, determine the sequence of amino acids based on your mRNA strand. Use hyphens (dashes) to separate amino acids.

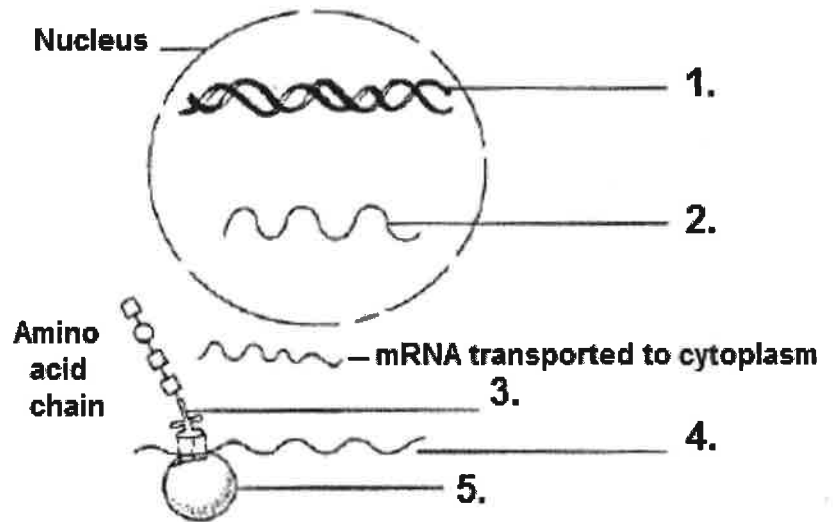
mRNA: _____

A.A.
sequence



Label the following diagram of Protein Synthesis.

- 1
- 2
- 3
- 4
- 5



Answer the following questions about Protein Synthesis.

List all of the molecules in the process transcription.

Transcription takes place on the _____.

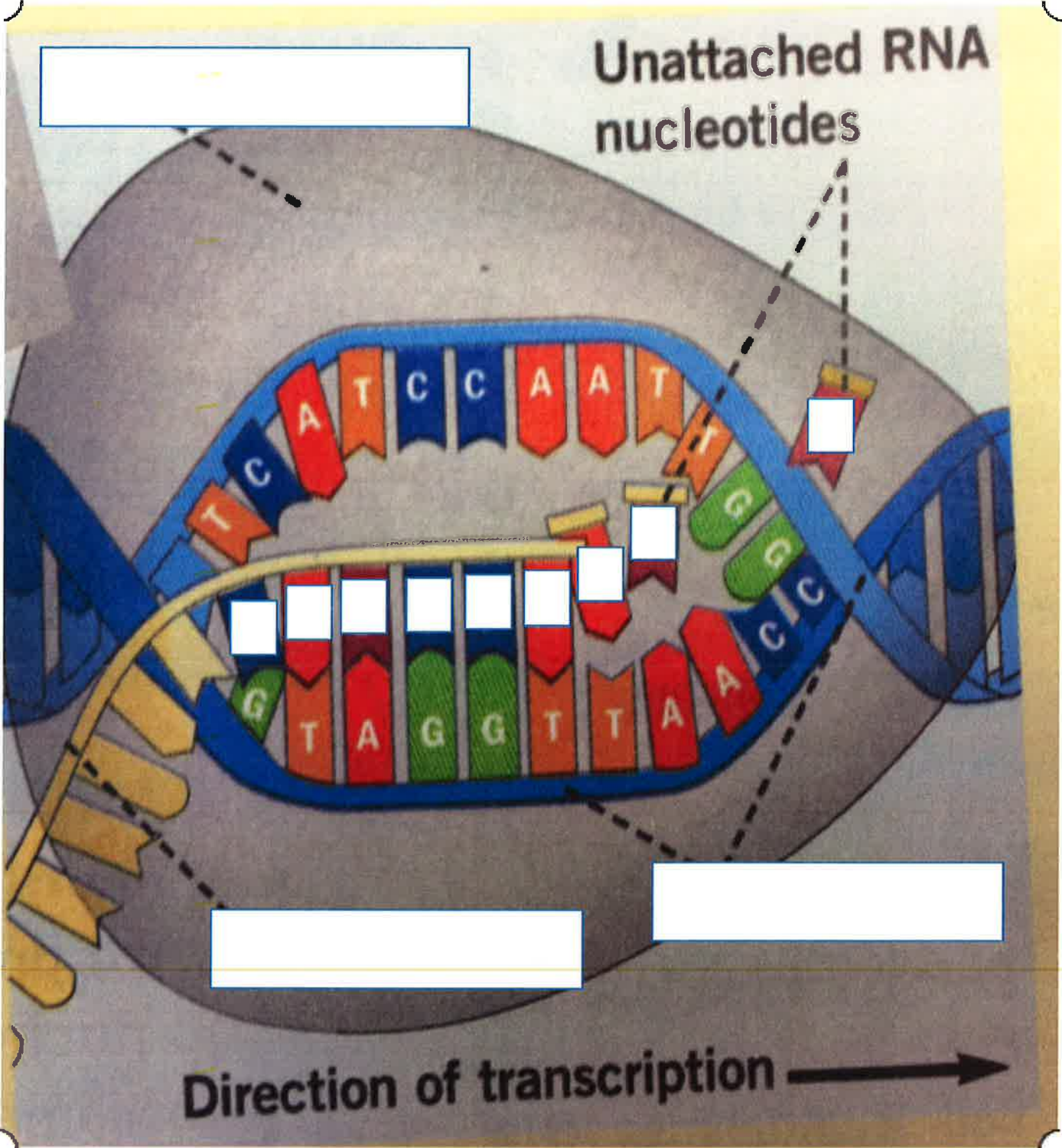
List all of the molecules in the process translation.

Translation takes place in the _____.

Why do cells need protein synthesis to occur?

Name: _____ per. _____

TRANSCRIPTION: LABEL PRACTICE



TRANSLATION: LABEL PRACTICE

