

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 transcription.

First, lets review the basic structure and function of RNA:

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
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
_____.

A. Transcription – What is it?

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**. This single strand is made up of **Cytosine, Guanine, Adenine, and Uracil**.

Thymine is NOT present in the RNA strand. Instead, all T's are replaced with U's. 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** (chain of amino acids), which will become a protein.

Where does RNA get its information from? _____

What four nucleotides make up RNA? _____

What is the specific name of the RNA that reads the DNA and copies the sequence?

Where does the mRNA strand go to? _____

How many nucleotides are in a codon? _____

What compound is formed using the mRNA strand and amino acids? _____

Below is a DNA sequence. Write the sequence of mRNA codons that would result from the transcription of the DNA sequence. **USE CAPITAL LETTERS.** Remember: No Thymine (T) in RNA. You will use Uracil (U) instead.

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

mRNA: _____