**DNA vs. RNA and Protein Synthesis Notes**

Name: Period:

**RNA is composed of 3 parts:**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-smaller sugar than deoxyribose
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* 4 Nitrogenous bases
	+ A
	+ G
	+ C
	+ U
	+ RNA is \_\_\_\_\_\_\_\_\_\_\_\_ stranded and thus smaller so it is able to leave the nucleus through \_\_\_\_\_\_\_\_\_\_\_\_.

**3 Types of RNA**

* mRNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_RNA

-Carries the gene code from the \_\_\_\_\_\_\_\_\_\_\_ to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_

* tRNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_RNA

-Delivers \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the ribosome

* rRNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_RNA

-Makes up the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Transcription: Writing the DNA message to mRNA**

* Takes place in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell
* Code for a gene gets transferred to mRNA.

**Step 1: DNA uncoils and unzips**

**Step 2: The exposed DNA bases match up with RNA** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **in the nucleus to form RNA.**

|  |  |
| --- | --- |
| DNA nucleotide matches with | RNA Nucleotide |
| Adenine (A) |  |
| Thymine (T) |  |
| Cytosine (C) |  |
| Guanine (G) |  |

 Transcribe: T A C G A G C C A T A T A A A

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 3: The mRNA will detach from the DNA**

**Step 4: The mRNA will move out of the nucleus into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and attach to a** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Translation: Reading the mRNA to make protein**

* Occurs on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which may be free floating or attached to the rough \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The mRNA strand is pulled through the ribosome ­­\_\_\_\_\_\_ bases at a time, in triplets.
* Each of these triplets on the mRNA strand is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Each codon will code for \_\_\_\_\_\_\_\_\_\_\_\_ amino acid

•These amino acids, when put together, form polypeptides, or proteins

•The genetic code is \_\_\_\_\_\_\_\_\_\_\_\_\_, meaning that there are 64 codons, but only 20 amino acids

-Each codon codes for one amino acid, but some amino acids are coded for by more than one codon



* **Transfer RNA** (tRNA) reads mRNA and delivers the appropriate \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_.
* At one end of a tRNA molecule is a set of 3 bases that will complement the mRNA strand. This is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* At the other end is a specific amino acid
* If the 3 base anti-codon complements the 3 base codon of the mRNA, the will combine briefly the tRNA will drop off the amino acid
* As each codon is read, the next tRNA brings in a new amino acid, and the protein chain grows



Transcribe and the Translate the following DNA Code

DNA: T A C A A T G T C A C G A G A T G A G T T

mRNA:

**Amino acid** \_\_\_\_\_ - \_\_\_\_\_\_ - \_\_\_\_\_\_ - \_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_ - \_\_\_\_\_\_- \_\_\_\_\_\_\_