**Protein Synthesis – Transcription & Translation**

**RNA (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

* \_\_\_\_\_\_\_\_-stranded (not double-stranded)
* Contains \_\_\_\_\_\_\_\_\_\_\_\_ sugar (not deoxyribose)
* Contains \_\_\_\_\_\_\_\_\_\_\_\_ (instead of Thymine)

**3 Types of RNA:**

1. **mRNA (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**
	* \_\_\_\_\_\_\_\_\_\_\_\_\_ copy of DNA.
	* Moves from \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_.
	* \_\_\_\_\_\_\_\_\_\_\_: 3 nitrogenous bases (codes for an amino acid)
2. **tRNA (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**
	* Transfers amino acid to ribosome.
	* Contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_ &
	\_\_\_\_\_\_\_\_\_\_\_: 3 bases (complement to mRNA codon)
3. **rRNA (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**



* + Makes up the ribosome.

**Ribosome**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ factory
* Contains \_\_\_\_\_\_\_ subunits.
* Made of \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_.

**Transcription:** mRNA makes a copy of a DNA segment.

* + Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \*Don’t forget: U is used instead of T
	+ Example

**Translation:** mRNA is used as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to create \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* + mRNA travels from the nucleus to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ The two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ subunits clamp onto the mRNA.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ brings an amino acid to the ribosome.
	+ tRNA’s anticodon bonds to its \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mRNA codon
	(this is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).
	+ Amino acids are attached together with \_\_\_\_\_\_\_\_\_\_ to form \_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_)

**64 possible mRNA codons:**

* Different codons can code for the same amino acid
	+ There are only \_\_\_\_\_\_ amino acids.
* Others code for instructions:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: AUG (also codes for methionine)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: UAA (does not code for an amino acid)

**Translation Example:**

mRNA strand: AUG CCC CUU AAA GAG UUU ACA UAU UGC UGG AGG CGU UAA

Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Translation Practice:**

1. mRNA: AUGCUUUUAGCACGACAACAAUGUUGA
Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. mRNA: UAUCAAGAUGAUACAGUUUUUUAG
Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. DNA: TACGGTCATCGTGCA
mRNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. DNA: TACGGCAATATT
mRNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

