Practice Question:

Draw a double strand of DNA with 4 total nucleotides (1 of each)

From Gene to Protein: *An Overview*

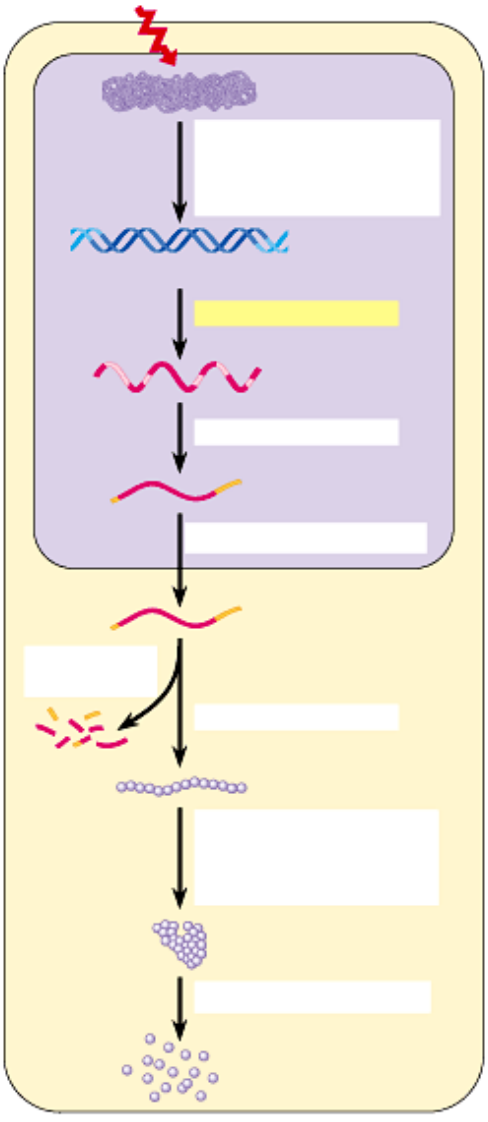
Turning the DNA message into PROTEINS (which do all the work)

1. A genome is ___a___ complete set of genes or genetic material present in a cell or organism.__.
2. The human genome is _____3 billion_____base pairs long, spread among __46__ chromosomes.

3. Although genes get a lot of attention, it's the _____proteins_____ that perform most life functions and even make up the majority of cellular structures.
    a. Proteins are large, complex molecules made up of smaller subunits called _____amino acids_____.

The path from gene to protein has three steps:

1. In __nucleolus_____, molecules of RNA are produced from the DNA in the nucleus.
2. During _____Text_____, the RNA is modified before leaving the nucleus and non-protein coding regions of the RNA strand are removed.
3. In _____, RNA molecules are used as a code for protein assembly at the ribosome.



RNA VS DNA

	DNA	RNA
Type of Sugar	deoxyribose	ribose
Number of Strands	usually double	usually single
Structure of Sugar (drawn)	NOTEBOOK	NOTEBOOK
Name of Bases	denine (A), cytosine (C), guanine (G), or thymine (T)	guanine, uracil (U), adenine, and cytosine

Here are 2 useful animations to help you understand the processes (optional)

- *What does the word transcription mean?*
- *http://bit.ly/asbtranscription*

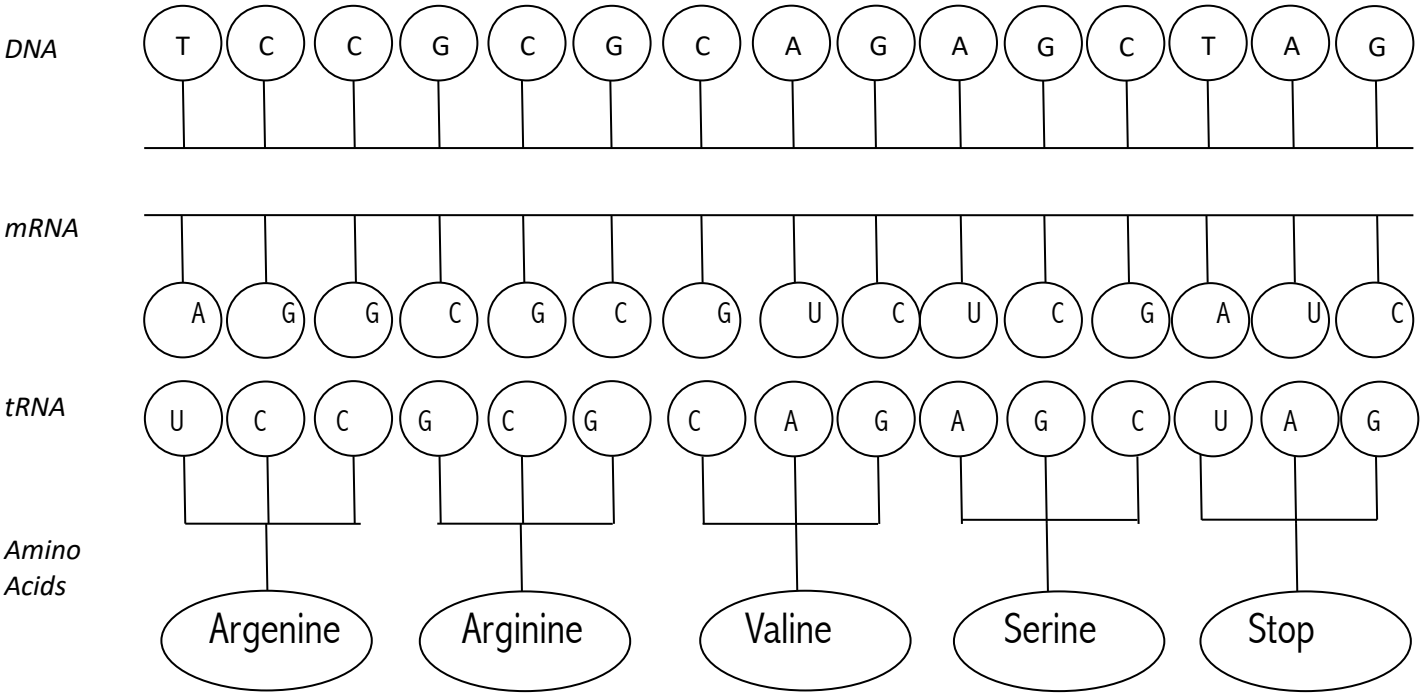
- *What does the word translation mean?*
- *http://bit.ly/asbtranslation*

Protein Synthesis Worksheet

Directions: See if you are able to start filling in the mRNA and tRNA in the following DNA and RNA strands. IF YOU CAN'T WE WILL WORK TOGETHER ON THIS NEXT CLASS!

1. Use the DNA code to create your mRNA code.
2. Use the mRNA code to create your tRNA code.
3. Answer any questions by **circling** the correct answer.

1.

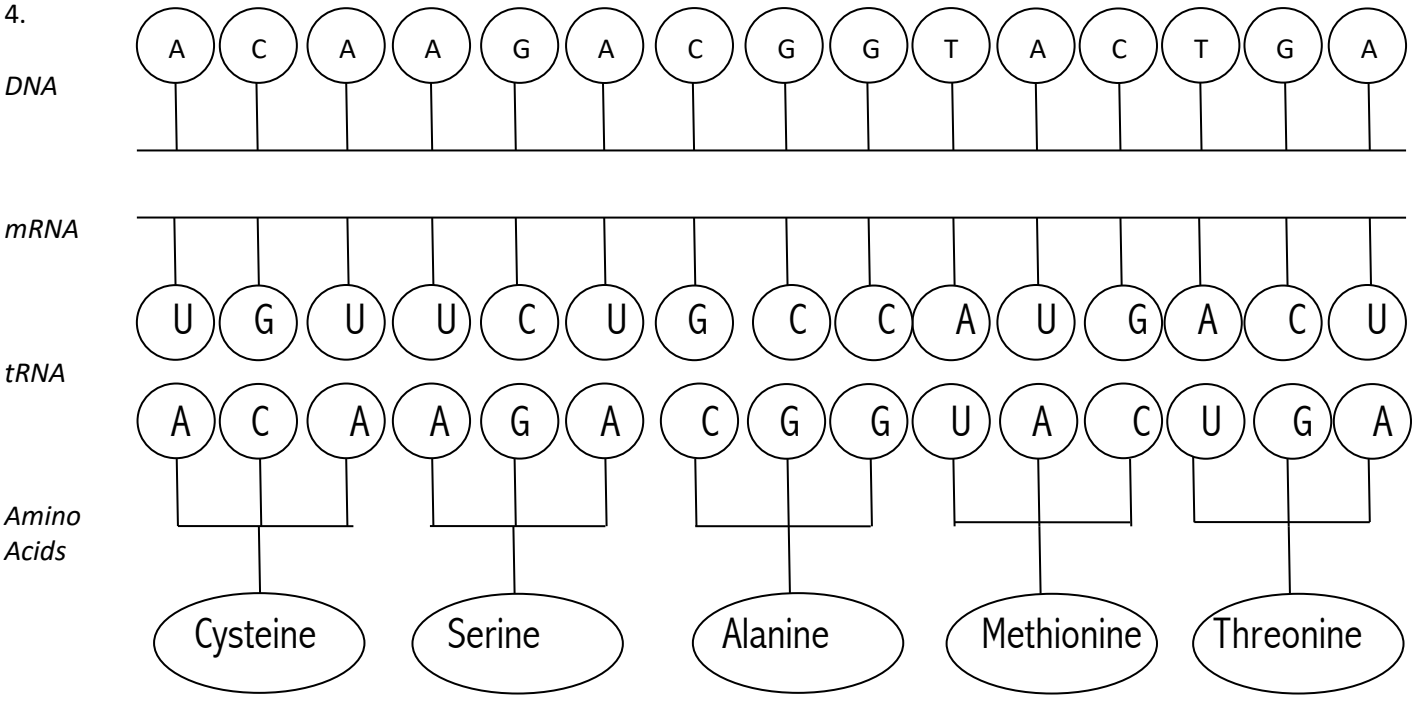


2. mRNA is made during (transcription/translation).

3. mRNA is made in the (cytoplasm/nucleus).

I feel comfortable doing this

4.



5. DNA is located in the (nucleus/cytoplasm)

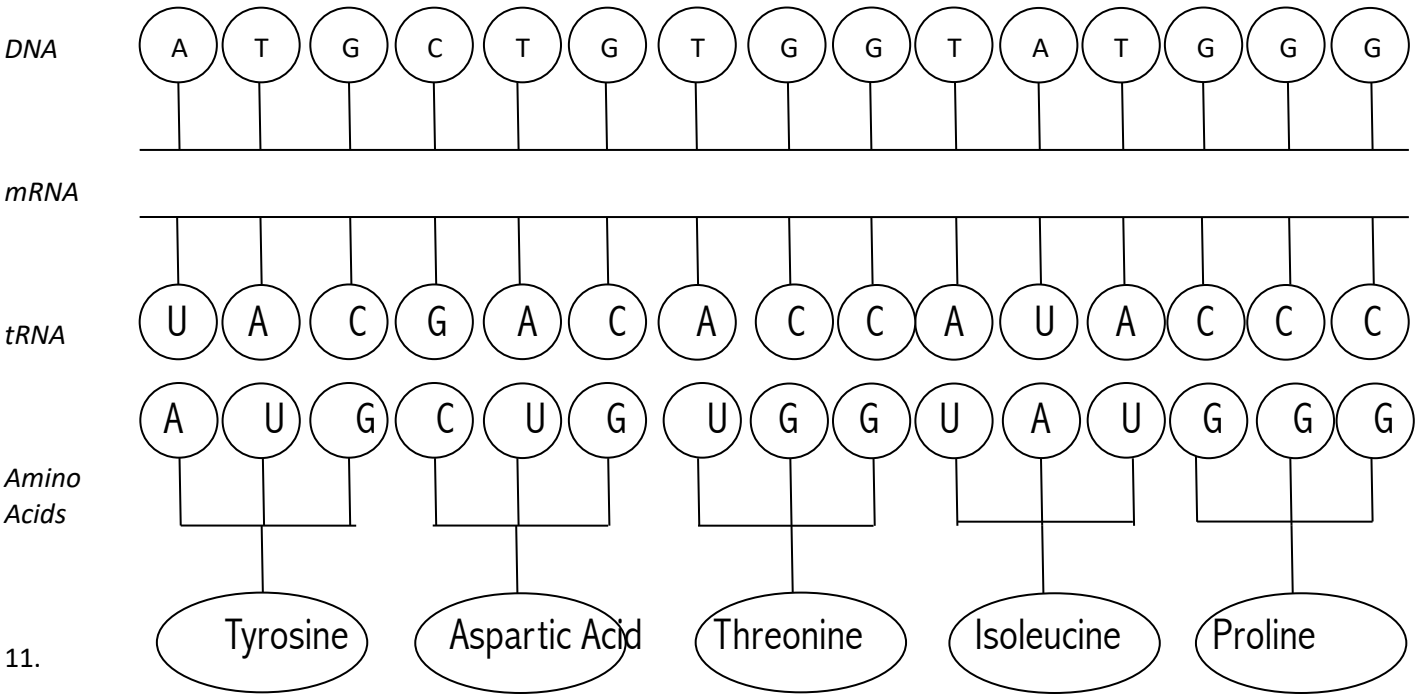
6. (mRNA/rRNA) is used to carry the genetic code from DNA to the ribosomes.

7. (tRNA/rRNA) makes up the ribosome.

8. (DNA/RNA) uses uracil instead of thymine.

9. (RNA/amino) acids make up a protein.

10.



11. Transcription takes place in the (nucleus/cytoplasm).

12. tRNA is used in (translation/transcription).

13. tRNA uses (anticodons/codons) to match to the mRNA.

14. Proteins are made at the (nucleus/ribosome).

15. (tRNA/mRNA) attaches the amino acids into a chain.

16. tRNA is found in the (nucleus/cytoplasm).

17. (Translation/Transcription) converts mRNA into a protein.

18. Translation takes place in the (cytoplasm/nucleus).

19. (DNA/RNA) can leave the nucleus.

20. (Translation/Transcription) converts DNA into mRNA.