Protein Synthesis 101

What is DNA?

- Blueprint of Life (has the instructions for making _____)
- Gene = a segment of DNA _____ which determines a _____ (_____)
- -_____ is wrapped around protein to form _____

- Structure was discovered by _____ & _____ (_____)

- Described shape as a _____ (_____)

Nitrogen Bases

Adenine (A) pairs with _____ & Guanine (G) pairs with _____

- Attach to _____
- Always follow "_____"
- Pair up _____
- Connected by weak _____

Check for Understanding 1:

1. What is the major purpose/function of DNA? _____
2. What are the 4 nitrogen bases in DNA? _____
3. How do the nitrogen bases pair with one another? _____
4. Who discovered the structure of DNA and what did they describe it as? _____

_____

DNA unzipped	**DNA polymerase adds complementary bases**	
A – ____	A - ____	A - ____
T – ____	T - ____	T - ____
T – ____	T - ____	T - ____
G – ____	G - ____	G - ____
C – ____	C - ____	C - ____
G - ____	G - ____	G - ____

2 _____ strands of DNA are formed before the cell goes through _____ so that each new cell has the same _____.

Why is this type of replication called 'semi-conservative'?

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DNA is too _____ so _____

What similarities do DNA and RNA have in common? _____

_____

What differences do DNA and RNA have? _____

_____

CFU 2: Make a Venn diagram below to show the similarities & differences between DNA & RNA.

What are the 3 types of RNA? _____

What does mRNA do? _____

What does rRNA do? _____

What does tRNA do? _____

The first step of making a protein is _____, and this is where DNA is _____

_____

Transcription occurs in the _____ during _____ of the Cell Cycle.

DNA - T A C G G C T A A A C T

mRNA - _____

Remember…RNA has _____ instead of _____ to bond with _____

The _____ molecule will _____ and go to a _____ in the _____

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The second step of protein synthesis is _____ where _____ picks up the correct _____ _____ in the cytoplasm and _____ to make the protein coded for by _____.

The mRNA molecule codes for a _____

- This occurs in the cytoplasm on a _____
- Each group of 3 mRNA bases = _____ = Codes for _____
    - 20 _____
    - Amino Acids are carried to ribosome by _____
    - Amino acids bond together to form _____

How do you go about coding for amino acids on a codon wheel? _____
_____

Check for Understanding 3

1. What are the three types of RNA? What are their functions?

2. Write the transcribed mRNA of the DNA molecule to the right: A T G G A C T A C G C A

3. Where are proteins made?

4. What are the building blocks of proteins?

What amino acids would the following mRNA codons code for?

mRNA - AUG CCG AUU UGA

Check for Understanding 4

- Given the following DNA sequence, give the mRNA sequence and the amino acids produced:
  DNA: G C C A A T T C G T G A

mRNA: ?

Amino Acids: ?

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The Big Picture

DNA ⟶ _____ ⟶ _____

_____ _____

1. _____ - DNA is copied into _____ in the _____

2. _____ - _____ picks up the correct _____ in the cytoplasm and takes it to the _____ to make the protein coded for by _____

Draw the diagram for protein synthesis to the right:

Draw the flow map for protein synthesis to the right:

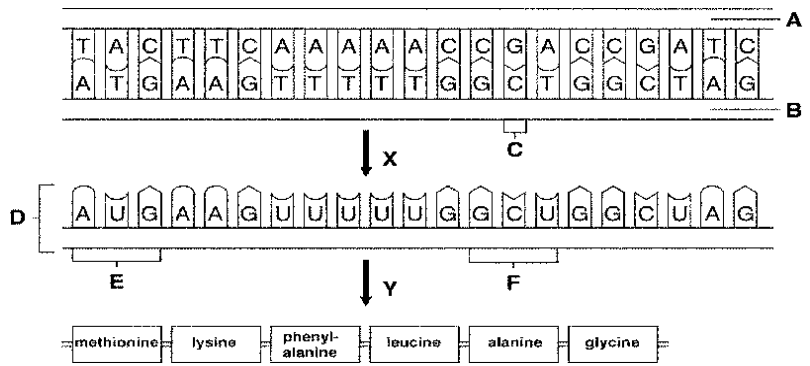
_____ is the making of a _____. To make a protein, a cell needs:

- DNA - _____
- mRNA codons - _____
- tRNA anticodons - _____
- Amino Acids - _____

CFU 5: _____ is the making of a protein. To make a protein, a cell needs:

- _____ - holds the code in the nucleus
- _____ - carries code to ribosome
- _____ - where protein is made
- _____ - picks up amino acids & brings them to ribosome
- _____ - building blocks of proteins

1. From which labeled structure is structure D made? _____
Identify that labeled structure. _____
2. Identify structure F. _____ What does it code for? _____
3. What is structure E? _____ What does it specify? _____
4. What would happen to structure F if structure C were deleted? _____
5. What processes do X & Y represent? _____ & _____
6. What does this entire diagram represent? _____



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