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Name _____ Date _____

Proteins Review Bellringer

Proteins play many roles in the body, including controlling metabolic reactions, contracting muscles, transporting molecules, regulating processes, providing structure in the epidermis, and protecting the body from illness and disease.

Proteins are made of subunits (monomer) called **amino acids.** Amino acids are made of carbon, hydrogen, oxygen, and nitrogen (CHON). There are 20 different amino acids that can be combined to make thousands of different proteins. Dehydration (removal of a water molecule) synthesis links amino acids link together to form chains called **polypeptides.** Polypeptides are joined and folded to make **proteins**. The bonds holding amino acids to each other are known as **peptide bonds**.

1. What are the monomers of proteins called? _____
   _____
2. Give 3 functions of proteins in your body.
   a. _____
   b. _____
   c. _____
3. Proteins that act as biological catalysts to control metabolic processes are _____.
4. Give 3 examples of proteins:
   a. _____
   b. _____
   c. _____
5. Proteins must have a very specific shape in order to function. This shape is related to the order of amino acids in the "chain." What might happen if this order of amino acids was changed? _____
   _____
   _____

Name _____ Date _____

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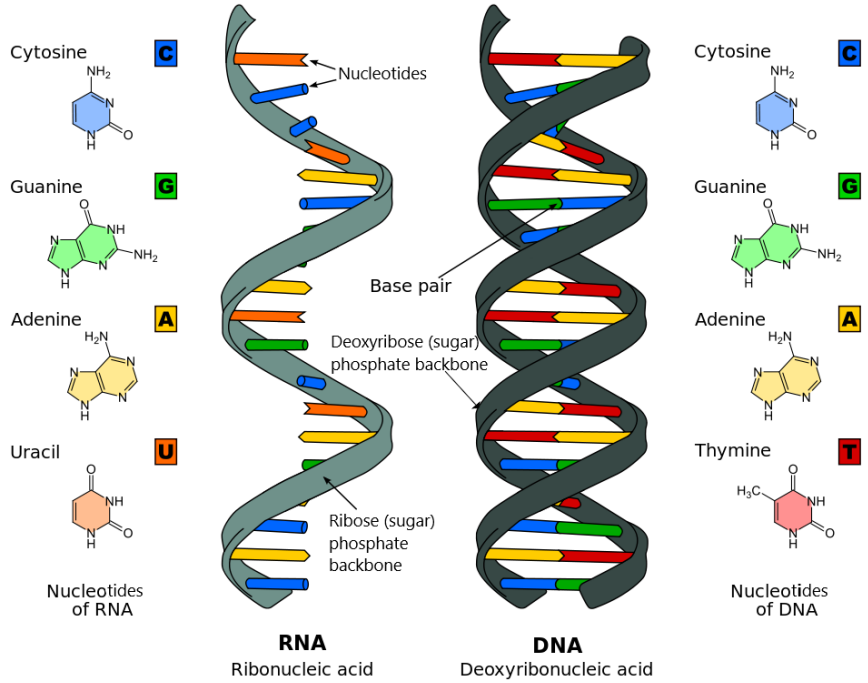
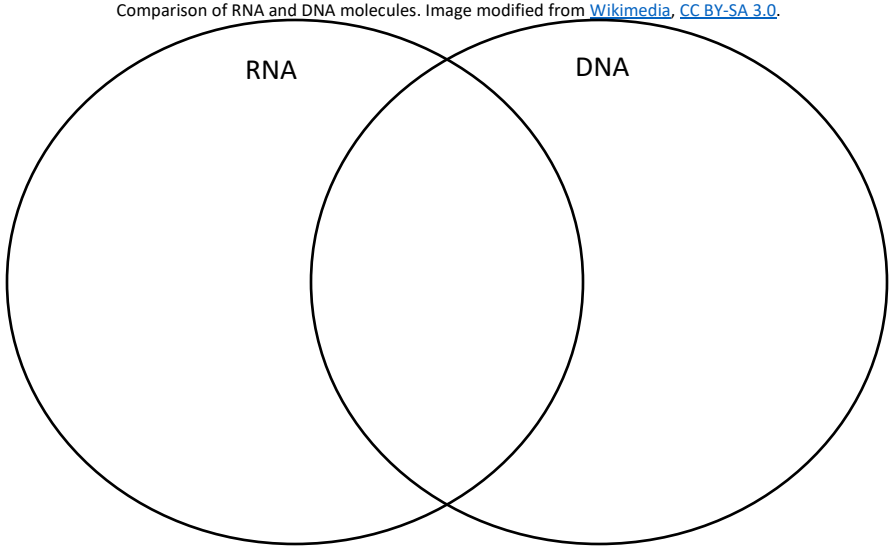
Name _____ Date _____

DNA & RNA Bellringer

Use the diagram to fill out the Venn diagram comparing DNA & RNA



Comparison of RNA and DNA molecules. Image modified from Wikimedia, CC BY-SA 3.0.



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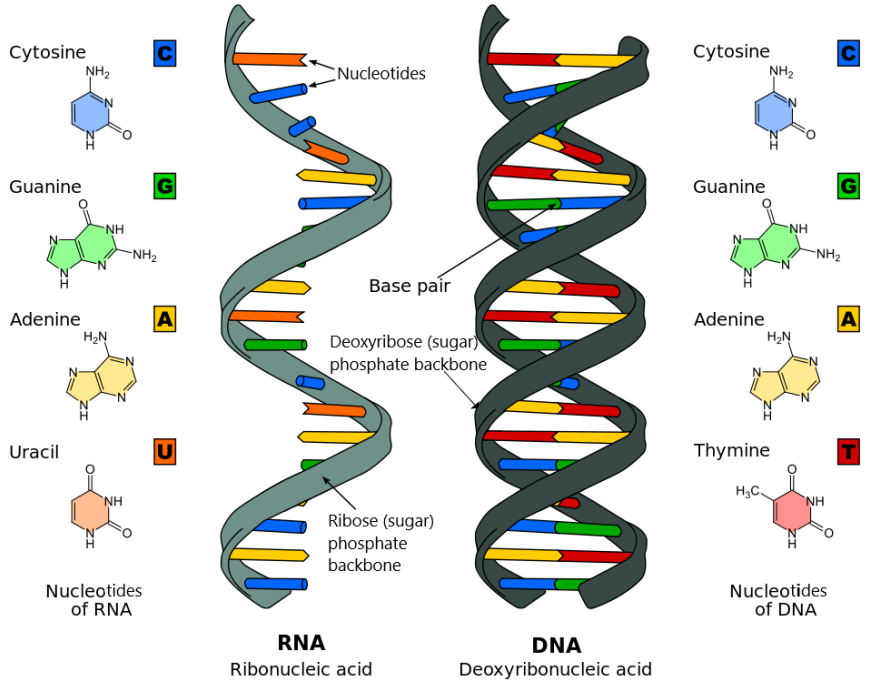
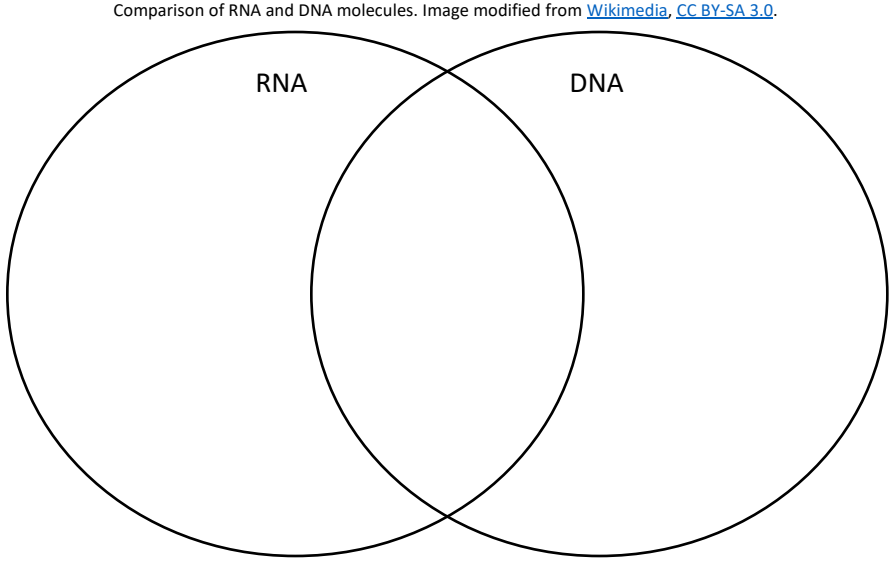
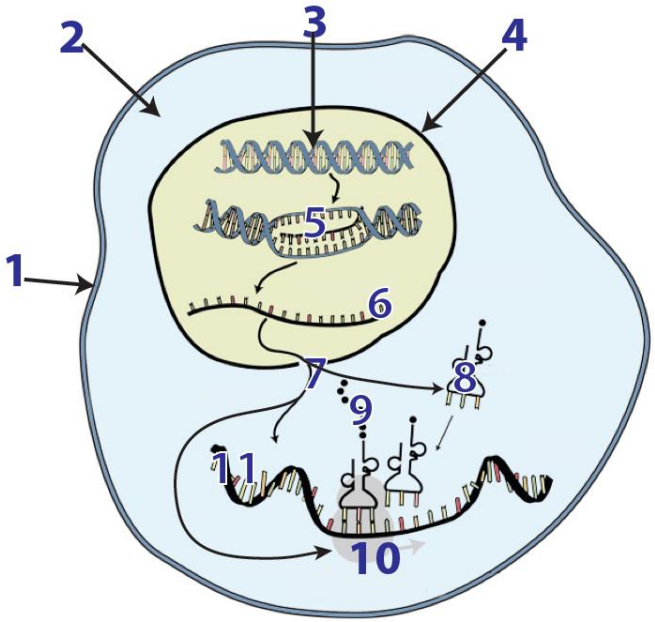


Comparison of RNA and DNA molecules. Image modified from Wikimedia, CC BY-SA 3.0.



Name _____ Date _____

Transcription and Translation Labeling Bellringer



Write the number of the correct structure or process below.

_____ Transcription

_____ Translation

_____ Nuclear membrane

_____ tRNA

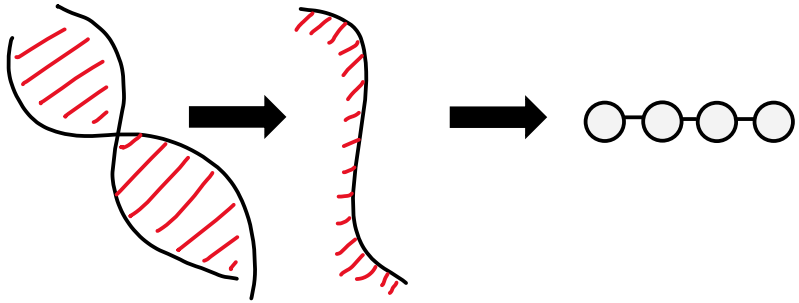
_____ Ribosome (rRNA)

_____ Cytoplasm

_____ mRNA

_____ DNA

Label the processes



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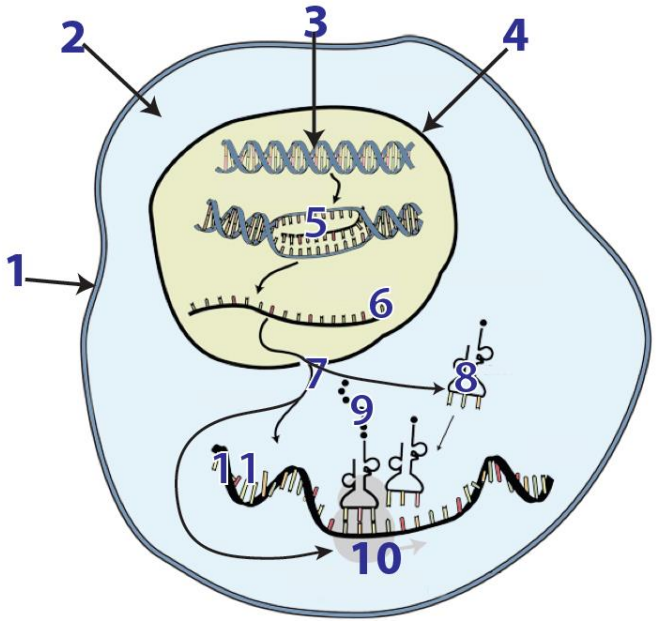
Transcription and Translation Bellringer



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_____ Cytoplasm

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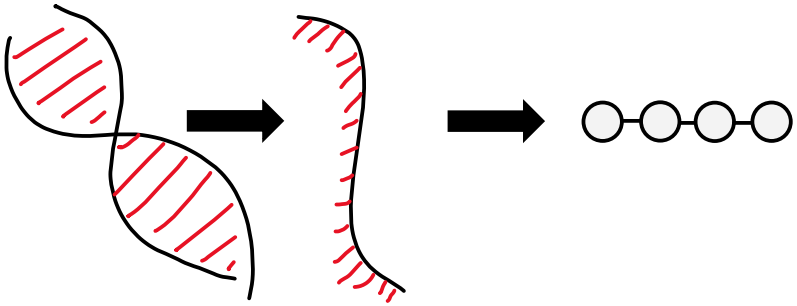
Label the processes



Name _____ Date _____

Protein Synthesis Bellringer

1. What molecule is produced from the DNA code? _____
2. What process produces mRNA? _____
3. Where does transcription take place? _____
4. What are 3 bases on mRNA called? _____
5. Where does mRNA take DNA's code? _____
6. What process occurs in the cytoplasm? _____
7. What organelle in the cytoplasm is responsible for putting together proteins? _____
8. What are 3 bases on tRNA called? _____
9. What monomer does tRNA bring to the ribosome? _____
10. What type of RNA makes up the ribosome? _____

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Name _____ Date _____

Transcription and Translation Coding Bellringer

Use your codon chart to transcribe and translate the Coding DNA Strand.

Transcription (occurs in cell nucleus)

Complementary DNA Strand

Coding DNA Strand

TAC	**GGG**	**AGG**	**ATA**

mRNA Codons

Translation (occurs in the cytoplasm at the RIBOSOME)

Amino Acid Chain

Name _____ Date _____

Transcription and Translation Coding Bellringer

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mRNA Codons

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Amino Acid Chain

Name _____ Date _____

Mutations Bellringer

Use your codon chart to fill in the amino acid sequences. Then, circle the change in the sequence. Try to label the type of mutation.

Original DNA Strand

TAC	**ATG**	**CAT**	**GTC**

Amino Acid Chain

Mutated DNA Strand #1 Type:_____

TAC	**ATG**	**CAA**	**GTC**

Amino Acid Chain

Mutated DNA Strand #2 Type:_____

TAC	**ATT**	**GCA**	**TGT C**

Amino Acid Chain

Mutations #2 DNA Strand Type:_____

TAC	**ATC**	**ATG**	**TC**

Amino Acid Chain

Name _____ Date _____

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Amino Acid Chain

Mutations #2 DNA Strand Type:_____

TAC	**ATC**	**ATG**	**TC**

Amino Acid Chain

Name _____ Date _____

Vocabulary Bellringer

Match the following words to the correct definition.

a. codon	b. mutation	c. amino acids
d. transcription	e. anticodon	f. frameshift
g. mRNA	h. translation	i. tRNA
j. point	k. trait	l. silent
m. rRNA	n. polypeptide	

1. _____ Characteristic of an organism
2. _____ 3 bases on tRNA
3. _____ process of converting mRNA strand into an amino acid sequence
4. _____ type of mutation that inserts or deletes bases and shifts the "reading frame"
5. _____ monomer of a protein, carried by tRNA
6. _____ type of RNA that carries the code from the nucleus to the ribosome in the cytoplasm
7. _____ type of RNA that makes up the ribosome
8. _____ 3 bases on mRNA
9. _____ process of copying the DNA into a strand of mRNA
10. _____ any change in the DNA sequence
11. _____ mutation that does not result in a change in the amino acid sequence
12. _____ type of RNA that brings the amino acids to the ribosome
13. _____ type of mutation that only changes at a single base by substituting one for another
14. _____ chain of amino acids; another name for a protein

Name _____ Date _____

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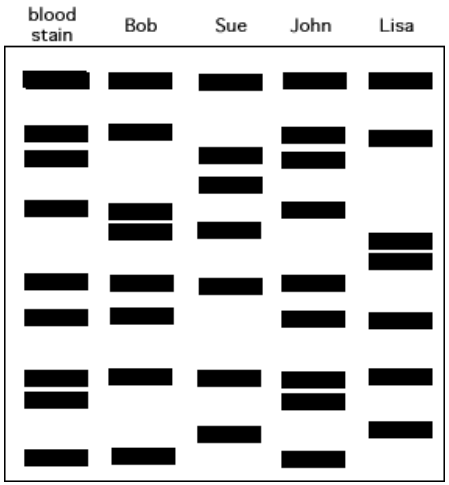
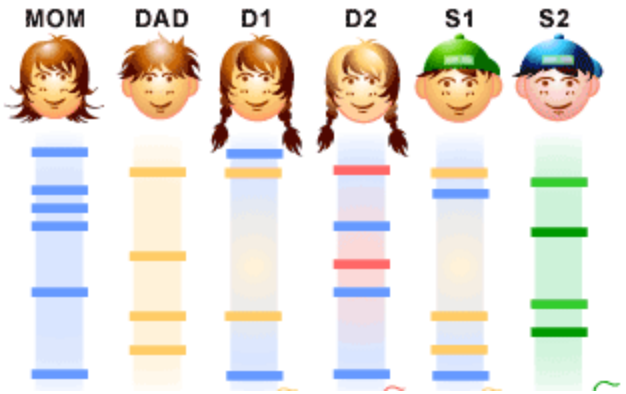
DNA Fingerprinting Bellringer

Sam and Dean are investigating a murder scene. The suspect left blood at the crime scene. Circle the perpetrator of this crime so they can be charged!



Mom and Dad have four children total. Two are their children together. One is from a previous relationship and 1 is adopted. Using the picture, determine which child is which.



Picture credit: The Science Creative Quarterly, scq.ubc.ca, Jane Wang

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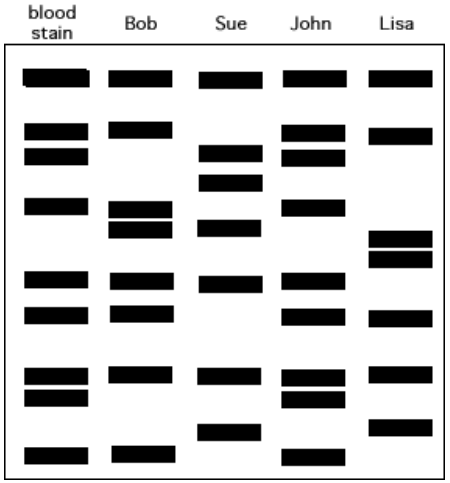

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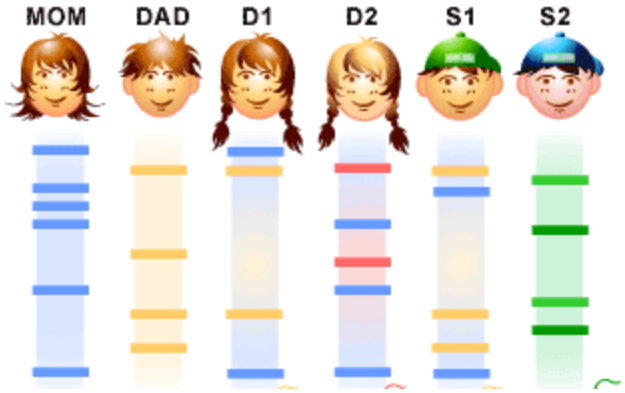

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