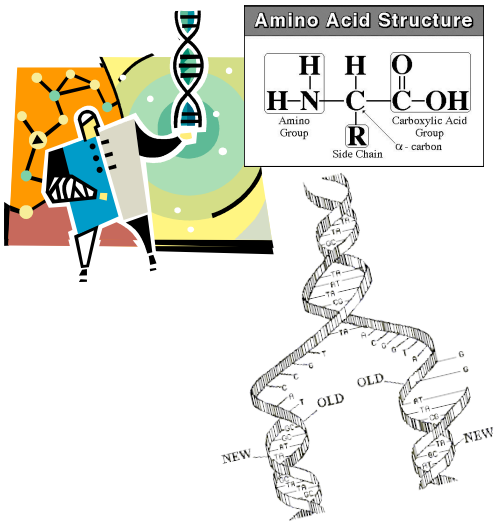
@ NEW SMYRNA BEACH HIGH SCHOOL

Accept our connectedness to events. It is not unknown forces that cause our problems. We are the cause and the cure. We create our own reality and we can change it.

Measurement Topic 14:
The Blueprint of Life

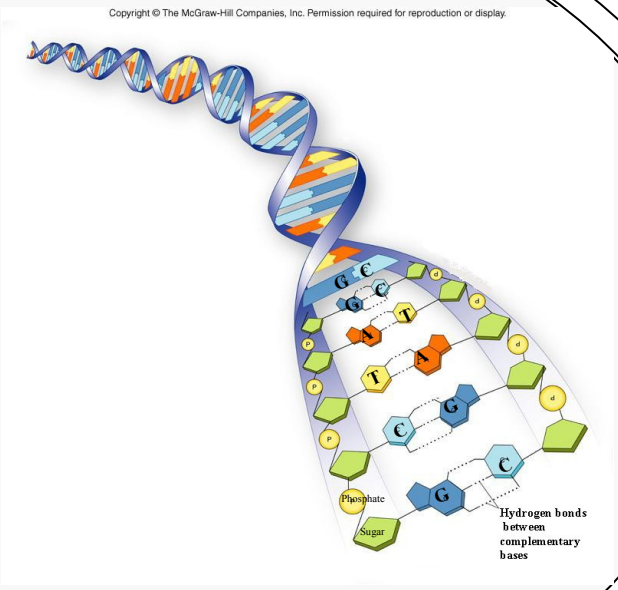


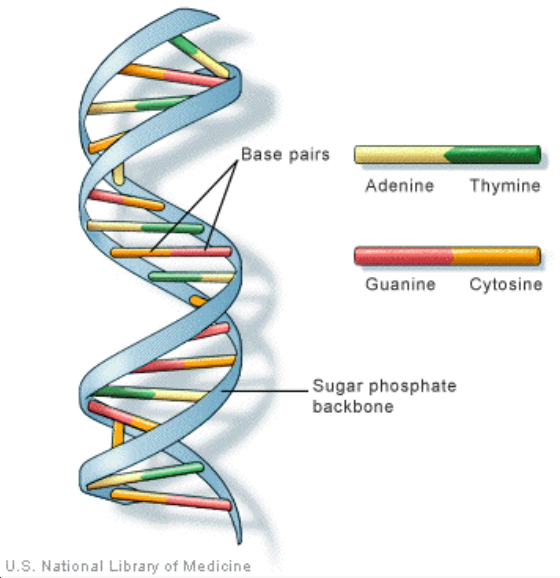
1. DNA Structure
2. Replication
3. RNA Structure
4. From DNA to RNA to Protein

2012-2013
New Smyrna Beach High School

Working together with parents, school personnel and community members, New Smyrna Beach High School students will graduate with the knowledge, skills and values to be positive contributors to society.

DNA STRUCTURE

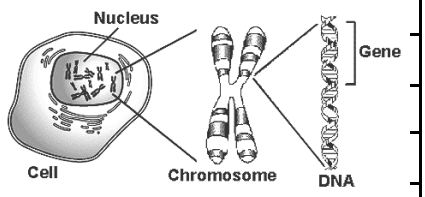




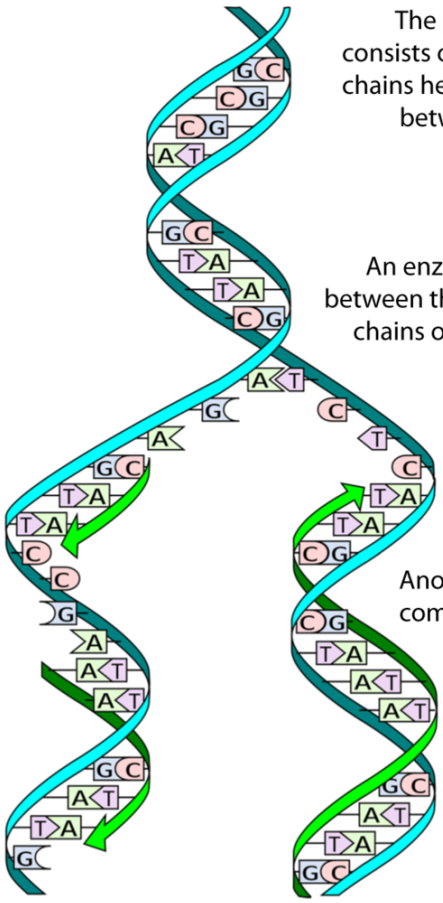
Measurement Topic 14

TOPIC: **DNA Structure**

Date:_____

Possible Test Questions or Topic	***Notes:***
1. (page 224-225)	
A) WHY is the mouse glowing?	
B) What is the relationship between	
chromosomes, DNA, genes &	
proteins?	
C) Do PROkaryotic cells have DNA?	
D) Do Eukaryotic cells contain DNA?	
2. (8.2) What is DNA composed of?	
A) Draw & label one of these subunits	
AKA monomers.	
B) One molecule of human DNA	
contains billions of nucleotides,	
BUT there are ONLY 4 types of	
nucleotides in DNA —> these differ	
ONLY in their Nitrogen containing	
bases. List the **4 N bases**?	
C) Summarize the **Base-Pairing Rules**	
of the 4 N bases.	
D) If given the following DNA strand,	**G A C—G A T—C A A—T G C—A G C—T T T—GGG—AAA—TCC**
write what the other half of the	*C T G—*
DNA would be.	
E) Are the four bases found in human	
DNA the same in all other organisms?	
What about the proportion?	

DNA REPLCATION

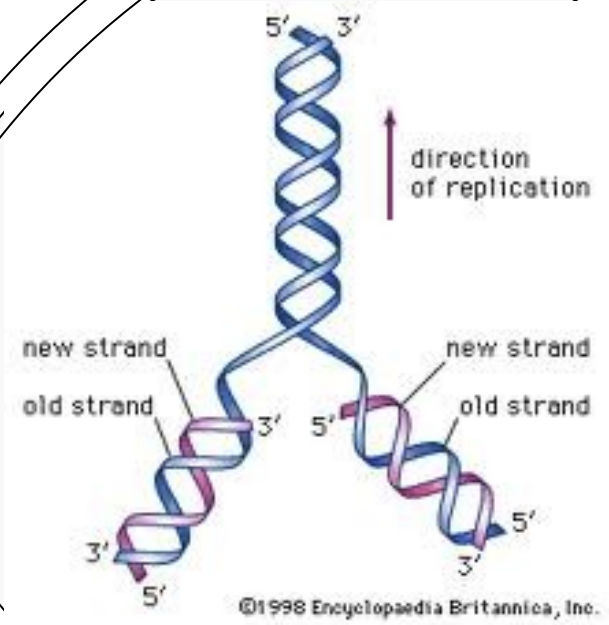


The parent DNA molecule consists of two polynucleotide chains held together by bonds between complementary nitrogen bases.

An enzyme breaks the bonds between the two polynucleotide chains of the parent molecule.

Another enzyme pairs new, complementary nucleotide with those in the two parental chains.

Two daughter DNA molecules form, each containing one new chain (green).



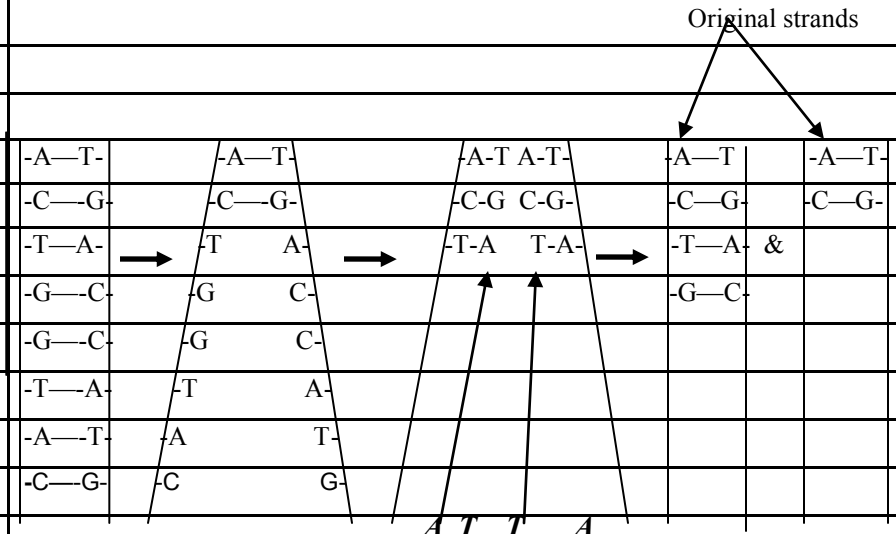
Measurement Topic 14

TOPIC: DNA Replication

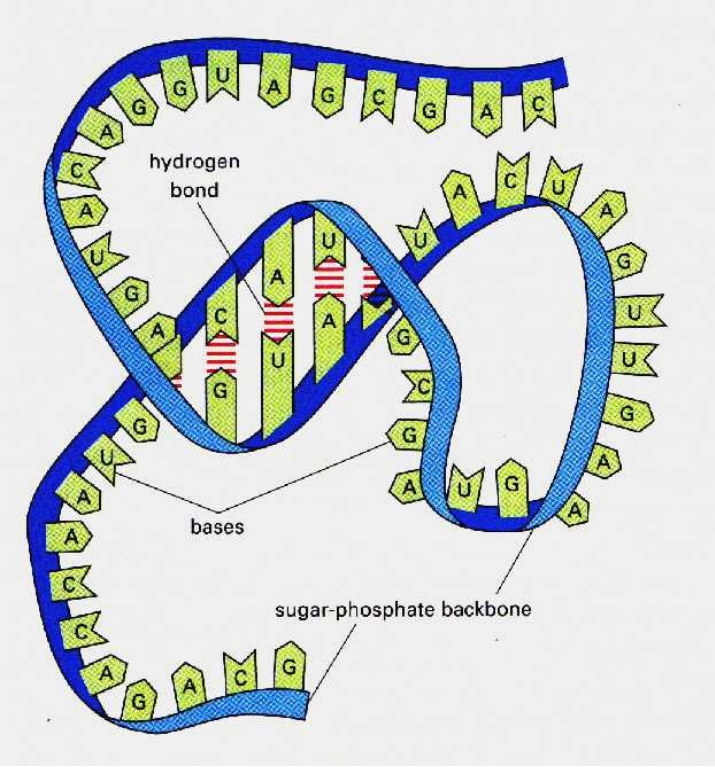
DNA Replication

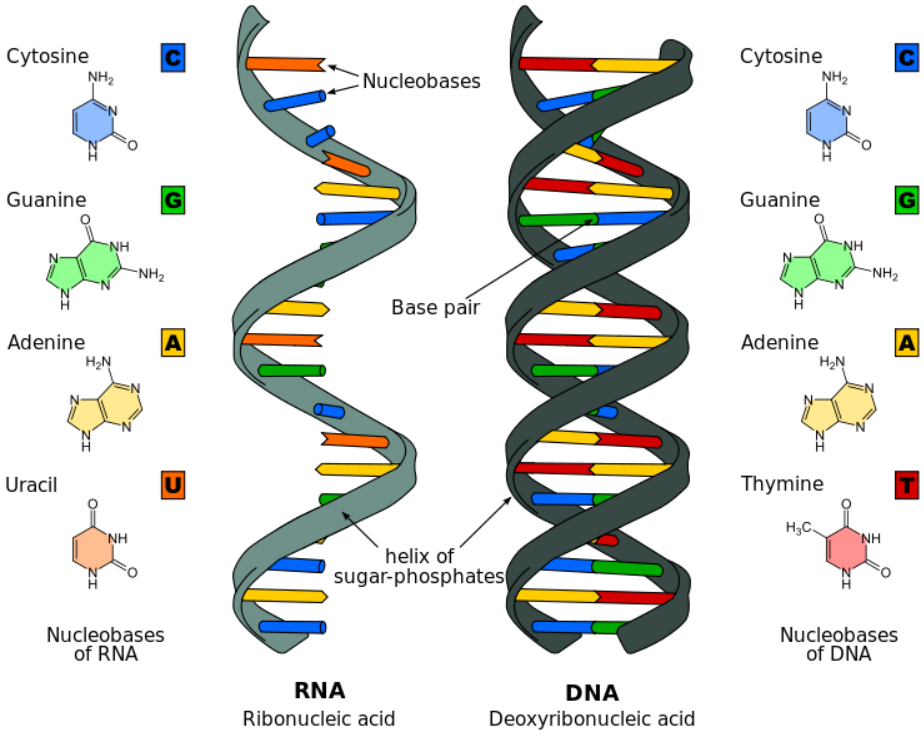
Date:_____

Possible Test Questions or Topic	***Notes:***
1. (8.3) What must happen before cells in your body divide to produce new cells?	
2. What is replication?	
3. How does replication endure that cells have complete sets of DNA?	
18. Replication takes place in the NUCLEUS!!! Describe what is taking place in each of the 4 steps:	



RNA STRUCTURE





Measurement Topic 14

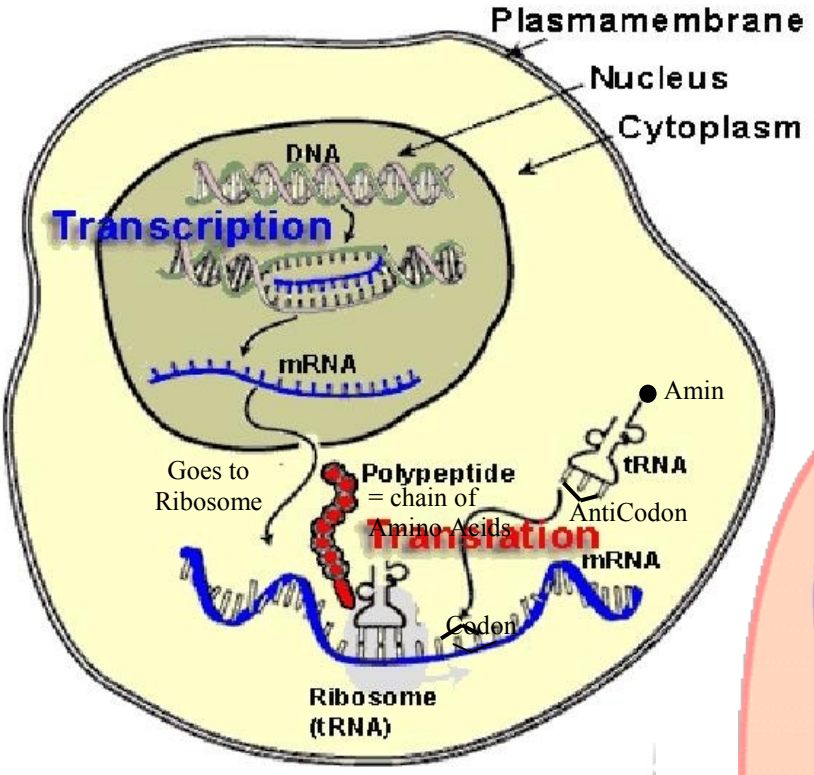
TOPIC: RNA Structure

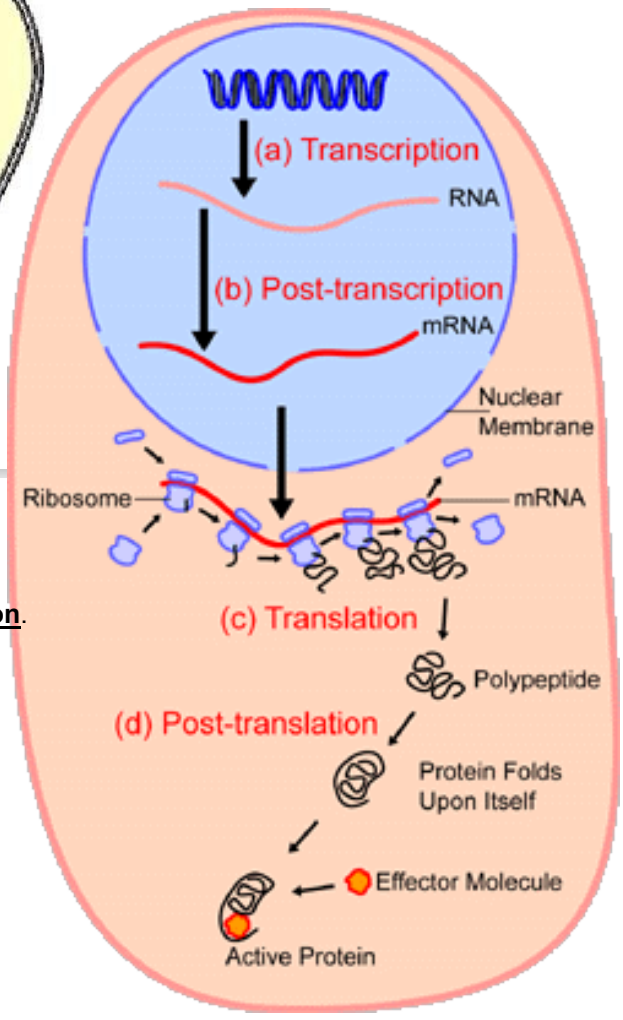
Date:_____

Possible Test Questions or Topic	***Notes:***
1. (8.4) What is RNA?	
2 Compare RNA to DNA	
** So here's the deal with DNA & RNA...*	*DNA is too big to fit through the pores of the nuclear membrane —DNA*
	temporality unzips in order to make an RNA strand . You will see on the
	next page that RNA sends to message out of the nucleus to the
	Ribosomes to tell them to make proteins (proteins make us what we are)!
	- FACT: DNA starts signal to make proteins
	- FACT: RNA delivers the signal
	So you need to know HOW to 'make an RNA strand'. Don't forget
	that ONE of the bases is different! Complete the following:
	A A A—T T T—C C C—G G G
	U U U—A A A—
	A C G - G C A - T A A - GTA
	T T C - G A A - G G G - A T T

	DNA	**RNA**
A. Letters stand for?	**DeoxyriboNucleic Acid**	
B. How many strands?		
C. Name of sugar?	**Deoxyribose**	**Ribose**
D. 4 base pairs?	A – T	A – ?
	C – G	C - G

PROTEIN SYNTHESIS





The instructions for building a protein are found in a gene and are "rewritten" to a molecule of RNA during **transcription**. The RNA is then "deciphered" during t**ranslation**

Measurement Topic 14

TOPIC: **Protein Synthesis**

Date:_____

Possible Test Questions or Topic	***Notes:***
	The function of DNA is to 'tell the cell' to make proteins, which are used to control
	chemical reactions. Examples: proteins give you eyes their color; digest food;
	make up your hormones, tell cells when to divide, help cells communicate with each
	other. HE QUESTION IS…. How to you get from this double-stranded DNA in the
	nucleus OUT to the RIBOSOMES to make PROTEINS?
1. What is Transcription?	
A. **m**RNA = **m**essenger RNA	
B. **r**RNA = **r**ibosomal RNA	
C. **t**RNA = **t**ransfer RNA	
2. What is Translation?	
3. Draw arrows to show the basic	#1 Draw an arrow from DNA to mRNA
process of Transcription and	#2 Draw an arrow from mRNA to the cytoplasm to the ribosomes
Translation	#3 Draw an arrow from tRNA to the amino acids then to the ribosomes
	#4 Draw an arrow from the ribosomes to proteins
Here is the basic summary:	#5 Draw an arro… …word traits TrAiTs!
DNA Starts the signal to	
make proteins —>	
The RNA delivers the	
message to the amino acids & the	
Ribosomes —> so the proteins can	
be put together so you look like you	
do or so plants look like they do...	
…. So every living thing looks like	
they do —> all because of how the	
PROTEINS are arranged!	
4. LABEL where Transcription takes place	
5. LABEL where Translation takes place