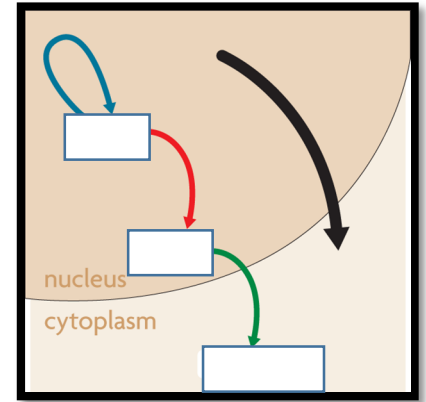


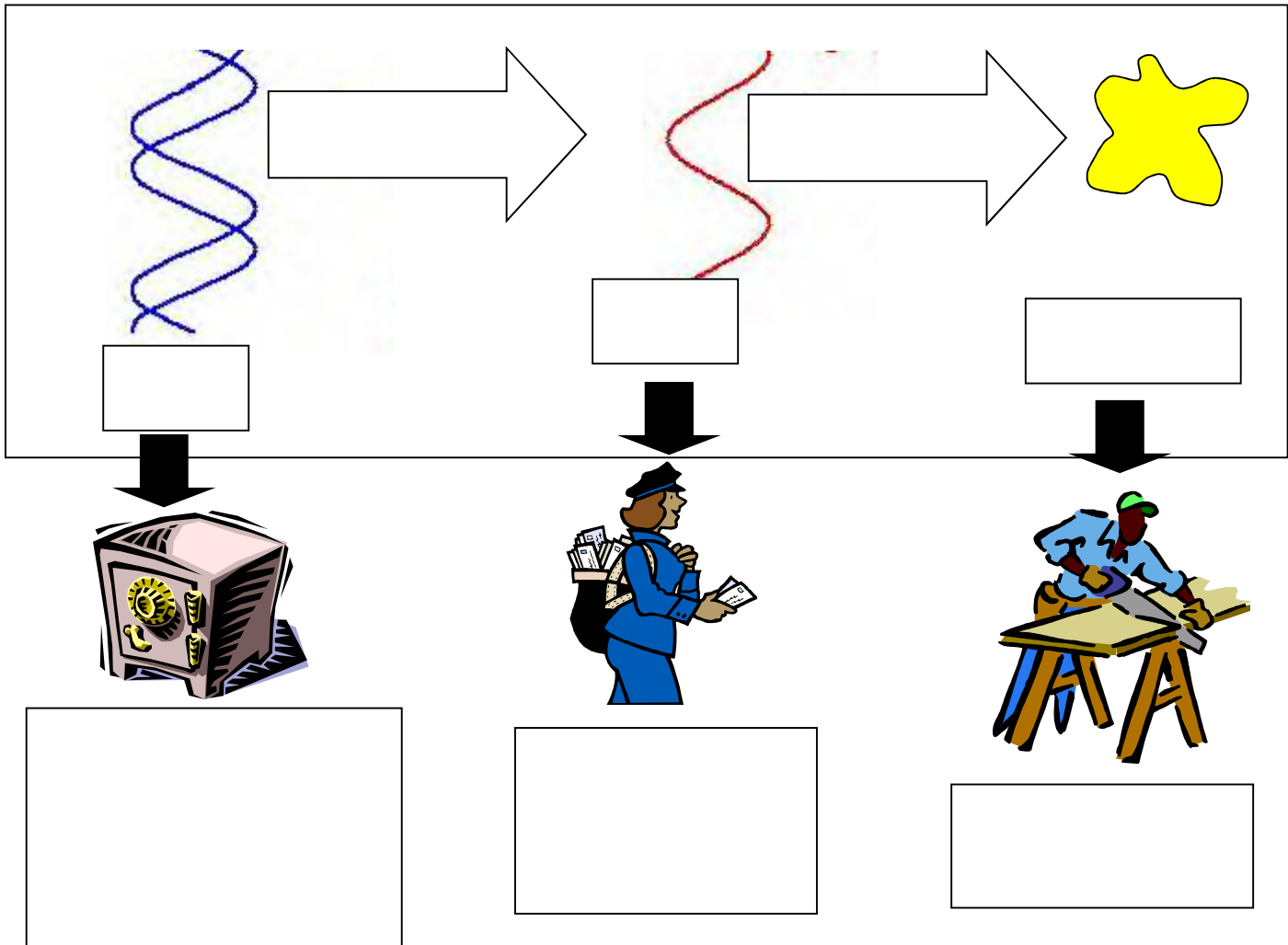
Transcription 8.4

The **CENTRAL DOGMA** of biology:

- Information flows in one direction: from _____ to _____
 - Involves 3 processes:
 1. _____ of DNA
 2. _____ of DNA into RNA
 3. _____ of RNA into protein
- Except: _____



Central dogma of molecular biology

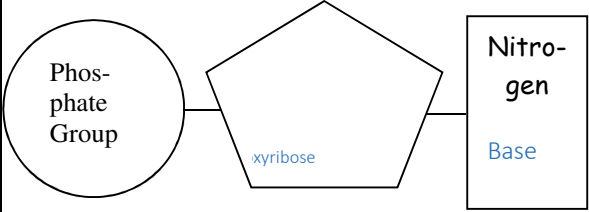
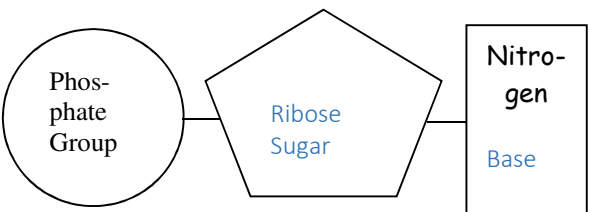




RNA

- RNA = _____
- Nucleic acid made from DNA that goes out into the _____ of the cell to help it stay alive
- RNA is made in a process called _____.

How does RNA differ from DNA?

1. Sugar is _____
2. Contains the base _____ in place of _____ (so A=U and C=G)
3. _____ strand of nucleotides

	DNA	RNA
<i>How many strands?</i>		
<i>Nucleotide subunit</i>		
<i>Bases</i>	Thymine (T) Adenine (A) Guanine (G) Cytosine (C) 	Adenine (A) Guanine (G) Cytosine (C) 

Transcription

- Process of copying a sequence of _____ (a gene) to produce a strand of _____
- Occurs in the _____

The Transcription Process:

1. A large transcription complex made of _____ and other _____ recognizes the start of a _____ and begins to unwind the segment of _____
2. _____ bonds nucleotides together to make a strand of _____ using DNA as a _____
 **Rules of base pairing for RNA: _____ = _____
 _____ = _____
3. The completed _____ strand separates from the DNA template and the DNA molecule _____ back together.

Three types of RNA:

1. Messenger RNA (mRNA): carries a _____ that will be translated to form a _____
2. Ribosomal RNA (rRNA): forms part of _____ where _____ are made
3. Transfer RNA (tRNA): carries _____ from the cytoplasm to ribosomes to make _____

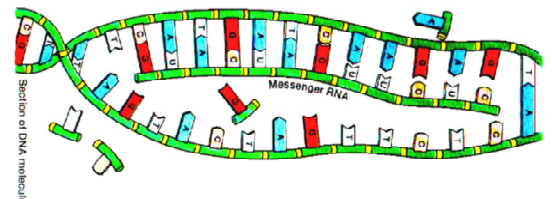
What is the complimentary mRNA strand made from this DNA sequence:

DNA Strand: A G C G T G C C A

mRNA strand: _____

DNA Strand : T A C C C C C G G A A T G A T G C A C T

mRNA Strand: _____



Translation 8.5

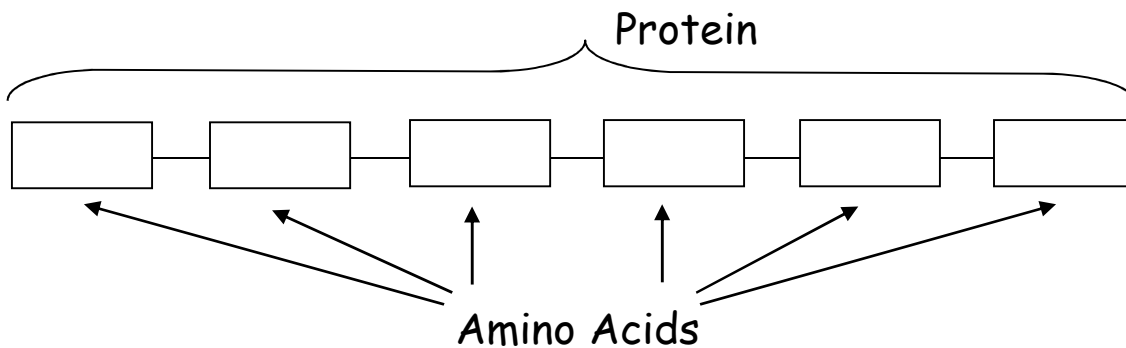
CODONS

mRNA sequence: U C G C A C G G U

- Read 3 bases at a time: UCG-CAC-GGU
- Each set of 3 nucleotides is known as a _____.
- Each codon represents an _____:
- _____ amino acids are formed= _____ nucleotides (A, U, G, C)

UCG-CAC-GGU → How many codon? ____
Serine-Histidine-Glycine → How many amino acids? ____

**remember _____ are made of amino acids



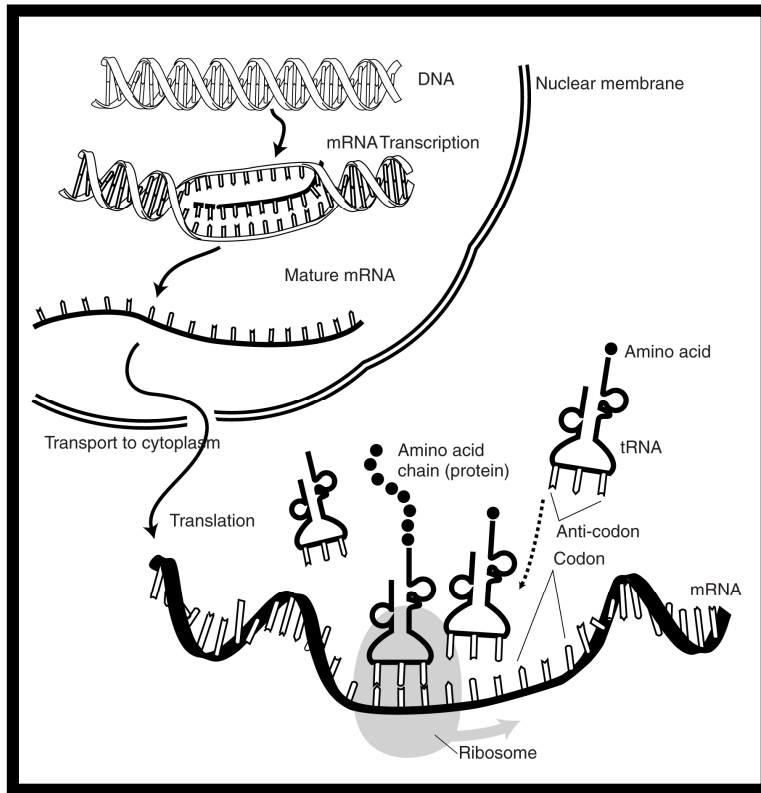
The Genetic Code: Matches each _____ to its _____ (pg. 244 in book)

TRANSLATION

- Information from _____ is used to make _____
- Takes place on _____ in the _____
- Before translation begins _____ is transcribed from _____ in the nucleus and released into the _____
- Translation begins at a certain codon on mRNA called a _____ codon (_____) and ends with one of three _____ codons (_____, _____, _____)

The Translation Process:

1. _____ moves through the _____. tRNA (transfer RNA) comes into the ribosome with an _____ on one end and an _____ on the other and pairs with the _____ codon (AUG) on mRNA
** _____: three bases on _____ which match one _____ codon
Ex. mRNA codon: _____
Anticodon: _____
2. A second tRNA comes in with its amino acid. The ribosome forms a _____ between the two amino acids to begin forming a _____. Once each tRNA has "dropped off" its amino acid it is released into the _____ to pick up another amino acid.
3. _____ molecules continue to come into the _____, bind with mRNA, and leave _____ that are bonded together to make a growing _____ until they reach a _____ codon (UAG, UAA, UGA). When a _____ has been reached the protein & mRNA will be released from the ribosome and _____ is complete



1. Read your mRNA codon → ACU
2. Find 1st base on the left, 2nd base on the top, 3rd base on the right. Find where they all cross in the chart.
3. Read your amino acid. → Threonine

Different codons code for different amino acids!!!

		Second base					
		U	C	A	G		
First base	U	UUU } Phenyl-alanine UUC } UUA } Leucine UUG }	UCU } UCC } Serine UCA } UCG }	UAU } Tyrosine UAC } UAA } Stop codon UAG } Stop codon	UGU } Cysteine UGC } UGA } Stop codon UGG } Tryptophan	U	C
	C	CUU } Leucine CUC } CUA } CUG }	CCU } CCC } Proline CCA } CCG }	CAU } Histidine CAC } CAA } Glutamine CAG }	CGU } Arginine CGC } CGA } CGG }	C	A
	A	AUU } Isoleucine AUC } AUA } AUG } Methionine start codon	ACU } ACC } Threonine ACA } ACG }	AAU } Asparagine AAC } AAA } Lysine AAG }	AGU } Serine AGC } AGA } Arginine AGG }	A	G
	G	GUU } Valine GUC } GUA } GUG }	GCU } GCC } Alanine GCA } GCG }	GAU } Aspartic acid GAC } GAA } Glutamic acid GAG }	GGU } Glycine GGC } GGA } GGG }	G	U
						Third base	
						U	C
						A	G