

Replication, Transcription, Translation

Name: _____ Section: _____

Replication:

Level 1: Identify the complementary bases for DNA:

A: _____ T: _____ C: _____ G: _____

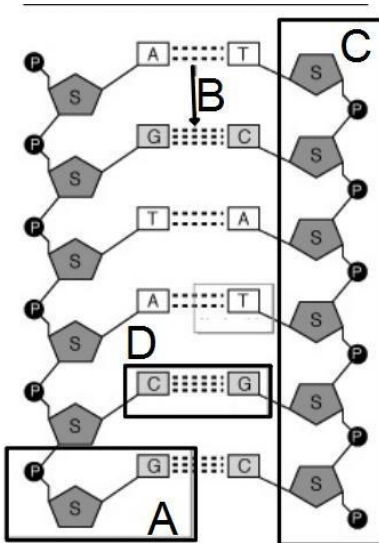
Where does replication take place? _____

Level 2: Replicate the DNA by writing the **COMPLEMENTARY** strand:

T A C G G C A T C G A A T C A

Level 3: Identify the following parts of the DNA molecule:

Hydrogen Bonds, Nucleotide, Sugar-Phosphate Backbone, and Base Pairs



A= _____

B= _____

C= _____

D= _____

Level 4: Explain how the structure of DNA allows it to replicate itself perfectly each time.

Transcription: DNA vs. RNA

Level 1: Identify the complementary RNA bases from the DNA stand:

DNA: A T C G

RNA: _ _ _ _

Where in the cell does transcription take place? _____

Level 2: Transcribe the following DNA strand into mRNA

T A C G G G A C T T T A G C A

Level 3: Identify the following characteristics as belonging to DNA, RNA, Both or Neither

____ Double stranded ____ Single Stranded ____ Contains Genes
 ____ Coils into chromosomes ____ A, U, G, C ____ Ribose sugar
 ____ Leaves the nucleus ____ Transcription ____ Made of nucleotide

Translation:

Level 1: Use the codon chart to identify the amino acid that goes with the following mRNA codons:

UUU= _____

CUG= _____

AUG= _____

UGA= _____

(write the amino acid as the three letter abbreviation...ex: Met, Val, Leu)

		Second letter				
		U	C	A	G	
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	U C A G
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G

Level 2: Where does translation take place? _____

What is made at the end of translation? _____

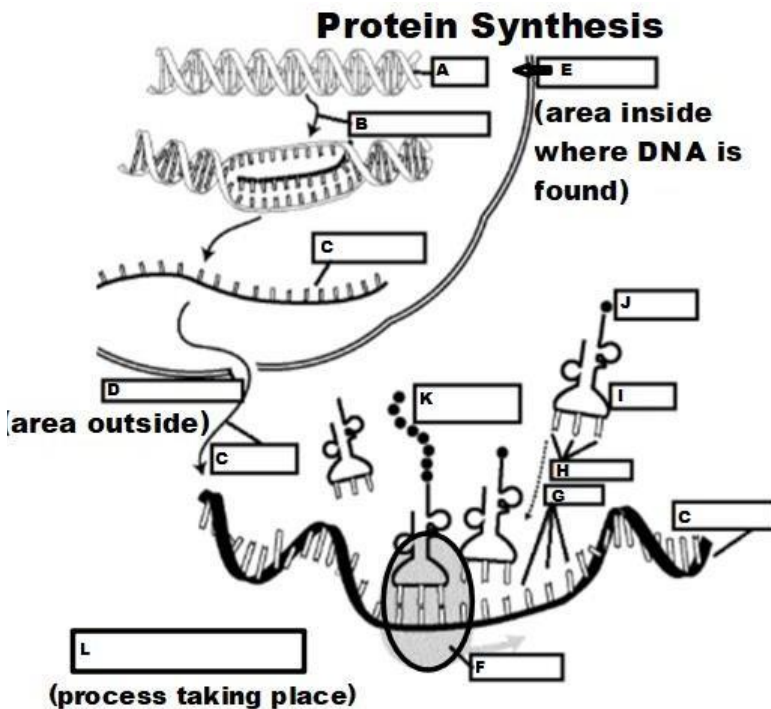
Level 3:

Determine the amino acid sequence from the following strand of mRNA (use the codon chart on the other page)

AUG GAA AAU CAC CGG UAG

_____-_____-_____-_____-_____-_____-

Level 4: Use the word bank to identify all of the parts/processes taking place in the picture below



Word Bank:

Nucleus

Cytoplasm

DNA

mRNA (3 times)

peptide chain (protein)

codon

anticodon

ribosome

amino acid

tRNA

Transcription

Translation

- | | |
|-------------------------|--|
| A= _____ (molecule) | G= _____ (3 nucleotides) |
| B= _____ (process) | H= _____ (3 nucleotides) |
| C= _____ (molecule) | I= _____ (name of molecule) |
| D= _____ (area of cell) | J= _____ (what is brought by molecule) |
| E= _____ (area of cell) | K= _____ (what is being built) |
| F= _____ (cell part) | L= _____ (name of process) |

Level 5: Roles:

What is the role of the mRNA? _____

What is the role of the tRNA? _____

What is the role of the ribosome? _____

Level 6: Putting it All Together:

Transcribe the following strand of DNA

TACGAGCCAATACCCATT

Translate the stand above

Transcribe the following strand of DNA

TACCGGACATTAGCCACT

Translate the stand above

		Second letter				Third letter
		U	C	A	G	
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	