mRNA	AND	TRAN	SCR	IPTIO	N
BERRATA AND		1 1/2/1/2			8.4

Name

Transcription

Fill in the blanks below. On the illustration of transcription, label the DNA, the newlyorming mRNA, the completed strand of mRNA and a free nucleotide.

Messenger RNA (mRNA) carries the instructions to make a particular <u>protein</u> from the DNA in the nucleus to the ribosomes. The process of producing mRNA from instructions in the DNA is called transcription.

During transcription, the DNA molecule unwinds and separates, exposing the nitrogenous bases. Free RNA <u>nucleotides</u> pair with the exposed bases. There is no thymine (1) in RNA. uracil (U) pairs with adenine (A) instead. RNA contains the sugar instead of deoxyribose. The mRNA molecule is completed by the formation of bonds between the RNA

nucleotides ____, and it then separates from the DNA. ne mRNA molecule is a <u>single</u> strand, unlike

Codons

DNA.

Each combination of three nitrogenous bases on the mRNA molecule is a codon, a threeletter code word for a specific amino acid. Second Base in Code Word

The table below shows the mRNA codon for each amino acid. Use the table to answer the questions below.

- 1. The codon for trytophan is $\bigcup GG$.
- 2. For leucine, there are _____ different codons.
- 3. The codon GAU is for Aspartic Acid
- 4. In a stop codon, if the second base is G, the first and third bases are $\underline{\qquad}$ and $\underline{\qquad}$.

	Lysine	Arginine	lsc
A.	Lysine	Arginine.	M
	Asparagine	Serine	iso
	Asparagine	Serine	isc
	Glutamic Acid	Glycine	Vo
		11 - 4	

	1 .				
A	Lysine	Arginine	Methionine	Threonine	G
	Asparagine	Serine	Isoleucine	Threonine	Ιυ
	Asparagine	Serine	Isoleucine	Threonine	l c
G	Glutamic Acid	Glycine	Valine	Algnine	A
	Glutamic Acid	Glycine	Valine ·	Algnine	G
	Aspartic Acid	Glycine	Valine	Alanine	ΙŪ
	Aspartic Acid	Glycine	Valine	Alanine	l c
ΰ	"Stop" codon	"Stop" codon	Leucine	Serine	T A
	"Stop" codon	Trytophan	Leucine	Serine	G
	Tyrosine	Cysteine	Phenylalanine	Serine	Ū
	Tyrosine	Cysteine	Phenylalanine	Serine	c
C.	Glutamine	Arginine	Leucine	Proline	Ä
	Glutamine	Arginine	Leucine	Proline	G
	Histidine	Arginine	Leucine	Proline	ΙŪ
	Histidine	Arginine	Leucine	Proline	c

DNA Transcription and Translocation

Procedure:

The following is the base sequence on one strand of a DNA molecule

AAT GCC AGT CCT TCG CAC

1. Give the base sequence of the complementary DNA strand.

2. Draw this DNA strand.

- 3. Give the base sequence of the strand of mRNA read from the original DNA strand.

 UUA CGG UCA GGA AGC GUG
- 4. Draw this mRNA strand.

5. What proten fragment would this mRNA code for? Leveine, Arginine, Serine, Gly cine, Serine, Valine

- 6. If the fourth nucleotide in the original DNA strand were changed from G to C, what would the resulting mRNA look like?
- 7. What would the resulting protein look like?
- 8. If a G were added to the original DNA strand after the 3rd nucleotide, what would the resulting mRNA look like?
- 9. What would the resulting protein look like?
- 10. If the 8th nucleotide in the original DNA strand were changed from G to C, what would the resulting mRNA look like?
- 11. What would the resulting protein look like?