

Protein Synthesis Worksheet

1- Complete the tables below using the information learned above.

DNA strand	GTTACGGTTAGATTG
mRNA transcript	
tRNA anticodons	
Amino acid sequence	

DNA strand	
mRNA transcript	AUGGUUCGUCAAGCCUGAC
tRNA anticodons	
Amino acid sequence	

DNA strand	
mRNA transcript	
tRNA anticodons	UACGUUCACAACUGA
Amino acid sequence	

2- Answer the questions using the following DNA sequence.

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

- a- Give the base sequence of the complimentary DNA strand.
- b- Give the mRNA strand that would be produced.
- c- Give the tRNA strand that would be produced. Place the appropriate AA above each anti-codon.
- d- Give the amino acid sequence which will be produced.
- e- If the fourth nucleotide in the original DNA strand were changed from 'G' to 'C', would it change the protein produced? Explain.

f- If a 'G' were added to the original DNA strand after the third nucleotide, would different amino acids be produced? Explain.

g- Explain if it is guaranteed that the amino acid sequence will change if you replace a nitrogen base with another nitrogen base.

3- Answer the questions using the following DNA sequence.

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

a- Make the mRNA strand.

b- Give the tRNA strand that would be produced.

c- Give the sequence of amino acids produced.

4- Answer the questions using the following DNA sequence.

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

a- Make the mRNA code using the above strand.

b- Using the sequence from the mRNA, show the sequence of the AA which are produced.

5- Make DNA strand of 27 nitrogen bases using the following instructions.
(Hint- it is easier to make the mRNA strand then the DNA strand)

- The start amino acid strand should be the third triplet and the end amino acid strand should be the second to last triplet.
- The 2nd and 5th triplet should code for the same amino acid, but a different codon must be used.
- The 4th, 6th and 7th triplet should code for the same amino acid, but a different codon must be used.

a- What is the lead DNA strand?

b- What is the mRNA strand?

c- Give the amino acid sequence.

6- Fill in the blank, words can be used more than once.

a- Chromosomes are made up of _____. Genes are made up of _____. Chromosomes, genes and DNA are found in the _____ of a cell.

b- When transcription occurs the type of RNA used is _____ and when translation occurs _____ is the type of RNA used?

c- Protein synthesis occurs in the _____. There are _____ possible codons and _____ possible amino acids. Many amino acids produce different _____. The amino acid sequence depends on a person's _____.

d- Individuals look different because they have different _____. A human has 23 pairs of _____. Chromosomes are inherited by parents which is why they have _____ of every chromosome.

e- The amino acid produced depends on the _____. The tRNA's function is to transport _____ to the _____.

f- The start codon is _____ and the stop codons are _____.

g- The sex chromosomes for a boy is _____ and sex chromosomes for girls are _____. It is the _____ who determines the sex of a baby.