Name:	Date:	Period:

<u>Mutations Worksheet</u>

Part 1: Gene Mutations

In the chart below, transcribe the DNA sequence into mRNA. Then use the codon chart (below) to indicate what amino acids are being coded for by the base sequences listed for the mRNA. Then, tell what type of gene mutation is being illustrated. Choose from **point mutation** and **frameshift mutation**.

		Type of Mutation
DNA sequence	TACGCCAGTGGT	
mRNA sequence		Original
Amino Acids		
DNA sequence	TACCCCAGTGGT	
mRNA sequence		
Amino Acids		
DNA sequence	TACCCAGTGGT	
mRNA sequence		
Amino Acids		



Part 2: Chromosome Mutations

For each diagram below, indicate what type of chromosome mutation is illustrated. Choose from: **deletion**, **insertion/duplication**, **inversion**, and **translocation**



For numbe	rs 1-5, choose fr	om the followin	ig terms.
Inse	ertion	Inversion	
Dele	etion	Substitution	
Poir	nt Mutation	Translocation	
1. Name th	e three types of	point (gene) mi	utations:
2. Name th	ne four types of	chromosome mi	itations:
3 W/bat m	utations would b	e considered fr	amachift mutations?
S. WHAT M		e considered fr	ameshiji mutations?
4. Which m	nutation involves	two chromoson	nes?
5. Can a po	int mutation be	a tramesnitt mi	
Match the	following terms	to the descript	ions below.
Α.	Deletion		
В.	Frameshift muta	ation	
С.	Insertion -		
D	Inversion		
E	Mutagen	ono mutation)	
г. С	Substitution	gene mutation)	
U. Н	Translocation		
1. A	N mutation that i	nvolves one or o	n few nucleotides.
2. I	Involves the loss	of all or part o	f a chromosome or one base.
3. P	Produces extra c	opies of parts c	of a chromosome or a base.
4. F	Reverses the dire	ection of parts	of chromosomes.
5. 0	Occurs when par [.]	t of one chromo	some breaks off and attaches to another.
6. <i>A</i>	Affects the DNA	l sequence of a	n entire chromosome.
7.4	A substance that	can change the	e chemical nature of DNA.
8. 0	One base is exch	anged for anoth	ner.
For numbe	rs 9 and 10, choo	ose from the fo	llowing terms:
Α.	Frameshift muta	ation	
В.	Point mutation		
9. <i>4</i>	A DNA segment i	is changed from	AAGGACATTAGC to AGGACATTAGC

_____ 10. A DNA segment is changed from GGTCAT to GGGCAT

Show how mutations can cause problems by completing the protein synthesis of the following DNA strands. Use the codon chart below to find the amino acids.



1. "Normal" DNA: TACCCCGTCACCGCCTATATC

	"Normal" mRNA:
	"Normal" Protein:
2.	"Mutated" DNA: TACCCCGTC <u>C</u> ACCGCCTATATC
	"Mutated" mRNA:
	"Mutated" Protein:
	Circle the type of mutation: POINT FRAMESHIFT
	Circle the specific type of mutation: INSERTION DELETION SUBSTITUTION
3.	"Mutated" DNA: TACCCCGT_ACCGCCTATATC
	"Mutated" mRNA:
	"Mutated" Protein:
	Circle the type of mutation: POINT FRAMESHIFT
	Circle the specific type of mutation: INSERTION DELETION SUBSTITUTION
4.	"Mutated" DNA: T A C C <u>A</u> C G T C A C C G C C T A T A T C
	"Mutated" mRNA:
	"Mutated" Protein:
	Circle the type of mutation: POINT FRAMESHIFT
	Circle the specific type of mutation: INSERTION DELETION SUBSTITUTION