Secret Pseudo-Protein Code

First Base	Second Base				Third Base
	U	C	A	G	
U	A	h	p	w	U
	a	I	Q	X	C
	B	i	STOP !	STOP .	A
	b	J	STOP ?	x	G
C	C	j	q	Y	U
	c	K	R	y	C
	D	k	r	Z	A
	d	L	S	z	G
A	E	l	s	Ñ	U
	e	M	T	ñ	C
	F	m	t	t	A
	START	N	U	ç	G
G	f	n	u	"	U
	G	O	V	;	C
	g	o	v	,	A
	H	P	W	space	G

Mutation activity.cwk
KEW 01/02

Name _____
Period _____
Date _____
Science

Mutations by Analogy

Every three bases on the mRNA codes for an amino acid. Every three bases of our "Secret Pseudo-Protein Code" codes for a letter or punctuation mark. Since our "Secret Pseudo-Protein Code" is more familiar, we will use it to examine mutations. Remember the same rules hold for both codes:

1. All messages must begin with START.
2. There are no spaces between three letter words, one simply counts every three letters.

1. Original message:

A U G G U G U U C A C U A C U G C A U A A

Point substitution mutation:

A U G G U G A U C A C U A C U G C A U A A

What was the effect of this mutation?

If this had been an mRNA coding for a protein, what would have been changed?

2. Original message:

A U G A C A U C A U G G A G A G A U C A A A U C

Point deletion mutation:

A U G A C A U C A U G A A A G A U C A A A U C

What was the effect of this mutation?

If this had been an mRNA coding for a protein, what would have been changed?

Does the size of this mutation's effect surprise you?

Name _____

3. Original message:

A U G G A G U C U U U C A A A U A G U A G A G G

Point insertion mutation:

A U G G A G U C U U U C A A U A U A G U A G A G G

What was the effect of this mutation?

_____

If this had been an mRNA coding for a protein, what would have been changed?

_____

4. Original message:

A U G U A U C A A G C A A A A A U C U C A G C U

Point substitution mutation:

G U G U A U C A A G C A A A A A U C U C A G C U

What was the effect of this mutation?

_____

If this had been an mRNA coding for a protein, what would have been changed?

_____

5. Original message:

A U G C C G U U C A A A A U C C A A U G A G C U

Point substitution mutation:

A U G C C G U U C A G A A U C C A A U G A G C U

What was the effect of this mutation?

_____

If this had been an mRNA coding for a protein, what would have been changed?

_____

Name _____
Period _____
Date _____
Science

6. During this activity you modeled protein synthesis using mRNA. But where did the mutation originally occur?

_____

7. What is a mutation?

_____

_____

_____

8. How can a mutation in the DNA cause a change in an organism's protein?

_____

_____

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_____

9. Do all mutations in the DNA coding for mRNA cause a change in an organism? Why or why not?

_____

_____

_____

_____

_____

10. Are mutations helpful or harmful?

_____

_____

_____

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_____

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