

MUTATIONS

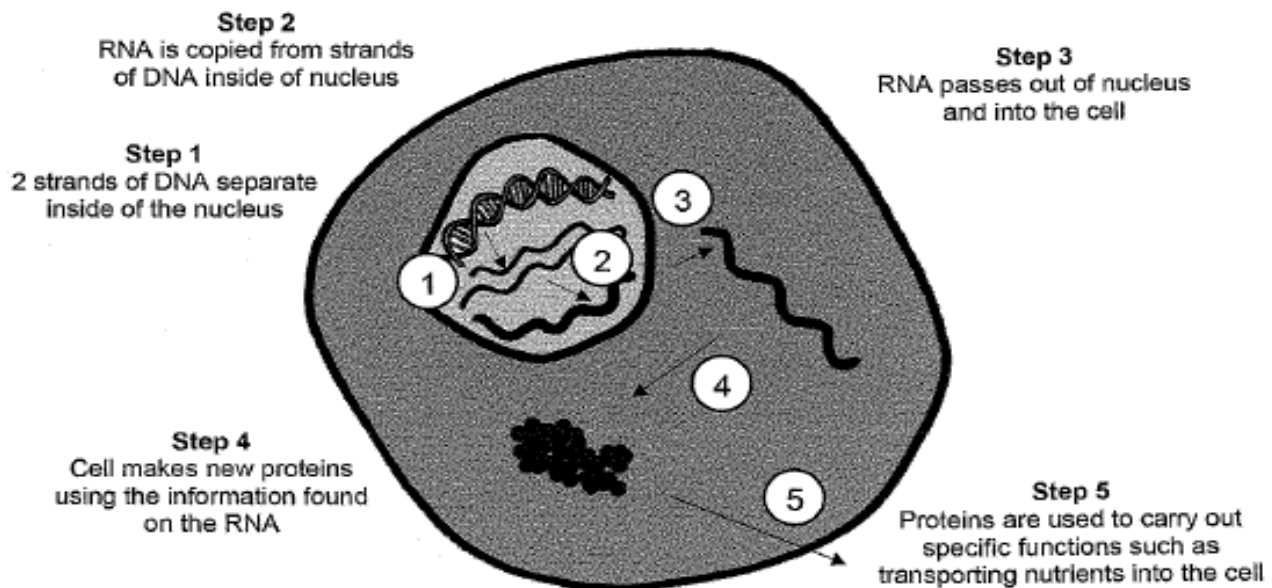
What you should know:

1. DNA is the code to make proteins.
2. Proteins control almost all of a cell's functions.
3. When DNA is decoded incorrectly. It is called a mutation.

This is how DNA gets decoded.

Start with **Step 1**.

Just know the BIG IDEA that DNA is decoded to make the final product which is proteins. – Mrs. Ott



Scroll down.



DECODE THE DNA

Take out a sheet of scrap paper. Decode the genetic material (3 nucleotides) below on your paper using the table as the decoder. Find the 3 letter sequence in the table and move across the row to the 3rd column and record that letter.

This activity is similar to how **DNA gets decoded to make proteins**. If there is an error in the decoding, the protein will not function in its normal way. **This is called a mutation**. The mutation may or may not be beneficial to the organism.

Codon	Amino Acid			Codon	Amino Acid	
	Name	Letter			Name	Letter
AAA	Lysine	K		CAA	Glutamine	Q
AAT	Asparagine	N		CAC	Histidine	H
ACA	Threonine	T		CCT	Proline	P
ATG	Methionine	M		CGT	Arginine	R
ATT	Isoleucine	I		TAT	Tyrosine	Y
GAA	Glutamate	E		TCT	Serine	S
GAC	Aspartate	D		TGG	Tryptophan	W
GCC	Alanine	A		TGT	Cysteine	C
GGT	Glycine	G		TTA	Leucine	L
GTT	Valine	V		TTT	Phenylalanine	F

a. Sequence 1:

GAC GAA CGT GAA AAA CAC GCC TCT GCC CAC GCC ACA
D E R E K H A D A ? ? ?

b. Sequence 2:

GAC GAA CGT GAA AAA CAC GCC TCT GCC TGT GCC ACA

c. Sequence 3:

GAC GAA CGT GAA AAA CAC GCC TCT GCC CAC GCC GAC

When done, scroll down for the answers. No peeking!



Correct Sequence...

a. Sequence 1:

GAC GAA CGT GAA AAA CAC GCC TCT GCC CAC GCC ACA
D E R E K H A S A H A I

b. Sequence 2: Circle the codons that have mutated in sequence 2.

GAC GAA CGT GAA AAA CAC GCC TCT GCC TGT GCC ACA
D E R E K H A S A C A I



c. Sequence 3: Circle the codons that have mutated in sequence 3.

GAC GAA CGT GAA AAA CAC GCC TCT GCC CAC GCC GAC
D E R E K H A S A H A D



e. Did the sentence translated from sequence 1 make sense? Why or why not?

Yes, Derek can have a hat.

f. Did the sentence translated from sequence 2 make sense? Why or why not?

Yes, Derek can have a cat.



ok mutation

g. Did the sentence translated from sequence 3 make sense? Why or why not?

Does NOT make sense.

Is not even a sentence.



not ok mutation

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