

# **Gene and Chromosome Mutation Worksheet** (reference pgs. 239-240 in *Modern Biology* textbook)

Name \_\_\_\_\_ Date \_\_\_\_\_ Per \_\_\_\_\_

Look at the diagrams, then answer the questions.

**Gene Mutations** affect a single gene by changing its base sequence, resulting in an incorrect, or nonfunctional, protein being made.

(a) A **SUBSTITUTION** mutation, occurs where one nucleotide base is replaced by another. These are often called "**point mutations**", because a **single base** is changed, at one **point** in the gene.

SOMETIMES, these base (A,T,C,G) substitutions lead to "**Missense**" or "**Nonsense**" mutations:

...ACT CAG AAC...  
...Thr Gln Asn...

...ATA CGA GCT...  
...Ile Arg Ala...

...ACT CGG AAC...  
...Thr Arg Asn...

...ATA TGA GCT...  
...Ile Stop...

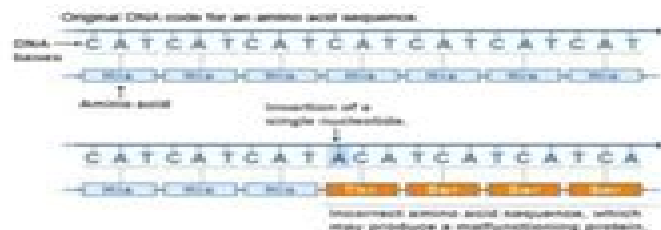
...and sometimes, because there is more than one codon for each amino acid, these mutations can be **SILENT**:

...TTC TGT AGT GGT...  
...Phe Cys Ser Gly...

...TTC TGC AGT GGT...  
...Phe Cys Ser Gly...

(b) Other types of mutations (**insertions or deletions** of nucleotide bases) cause **FRAMESHIFTS**:

Insertion mutation:



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Deletion mutation:



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# Gene And Chromosome Mutation Worksheet Answer Key

**D Siedentop**



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