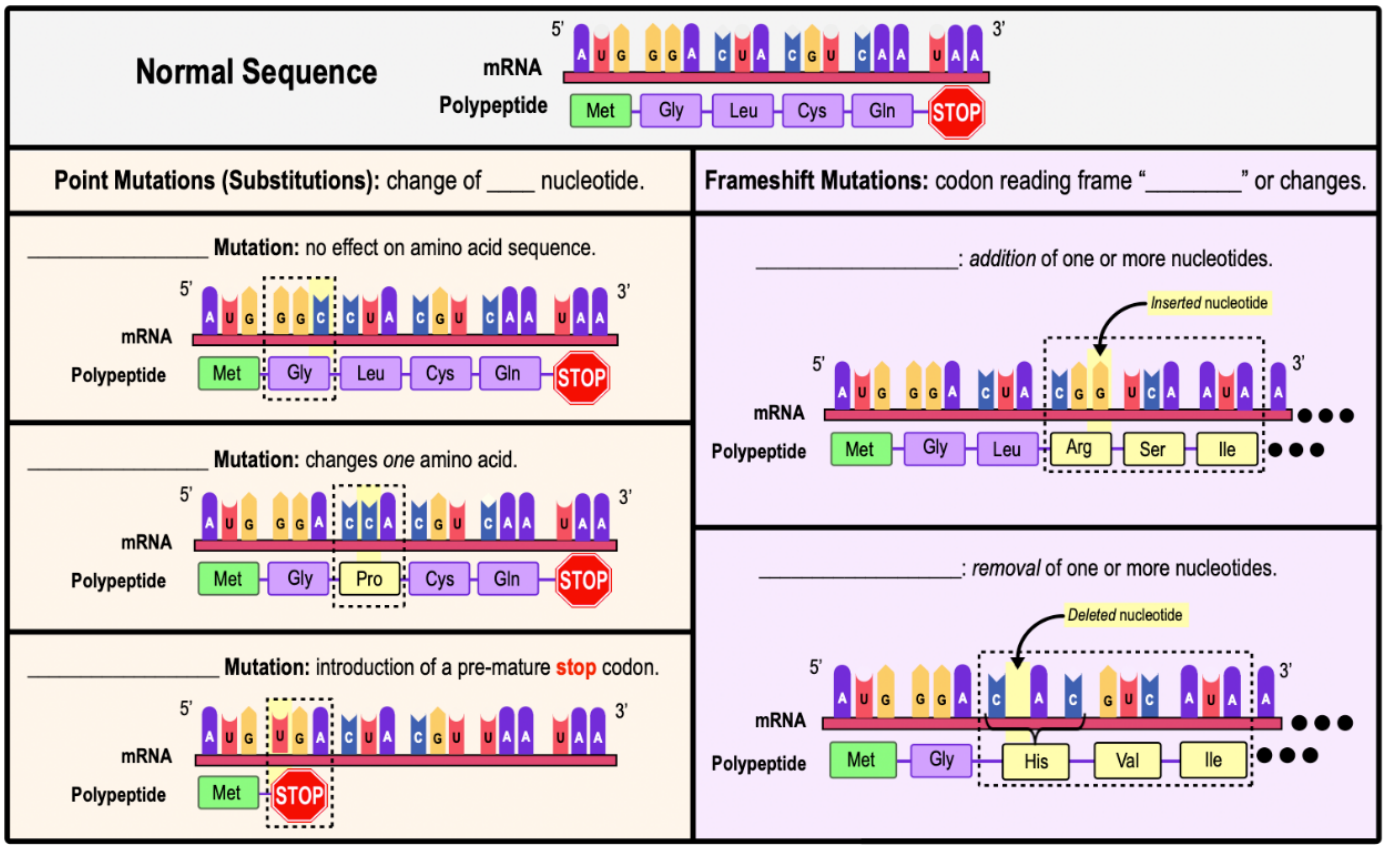
CONCEPT: INTRODUCTION TO MUTATIONS

●**Mutations**: permanent _____ in the DNA sequence of an organism.

□ Can be harmful, beneficial, or neutral in terms of their impact/result on the cell.

Types of Mutations

●There are MANY different types of mutations that can occur in the cell:



PRACTICE: Which of the following mutations, occurring just after the start codon in the mRNA is likely to have the most serious effects on the polypeptide product?

a) Deletion of one codon.

b) Deletion of one nucleotide.

c) Insertion of three nucleotides.

d) Substitution of one nucleotide.

CONCEPT: INTRODUCTION TO MUTATIONS

PRACTICE: A single base substitution is LEAST likely to be deleterious (dangerous) when the change results in _____.

a) Replacement of a codon specifying a hydrophilic amino acid with a codon that specifies a hydrophobic amino acid.

b) Replacement of a codon which codes for an amino acid with a stop codon.

c) The change of a codon specifying a specific amino acid important for the active site of the protein.

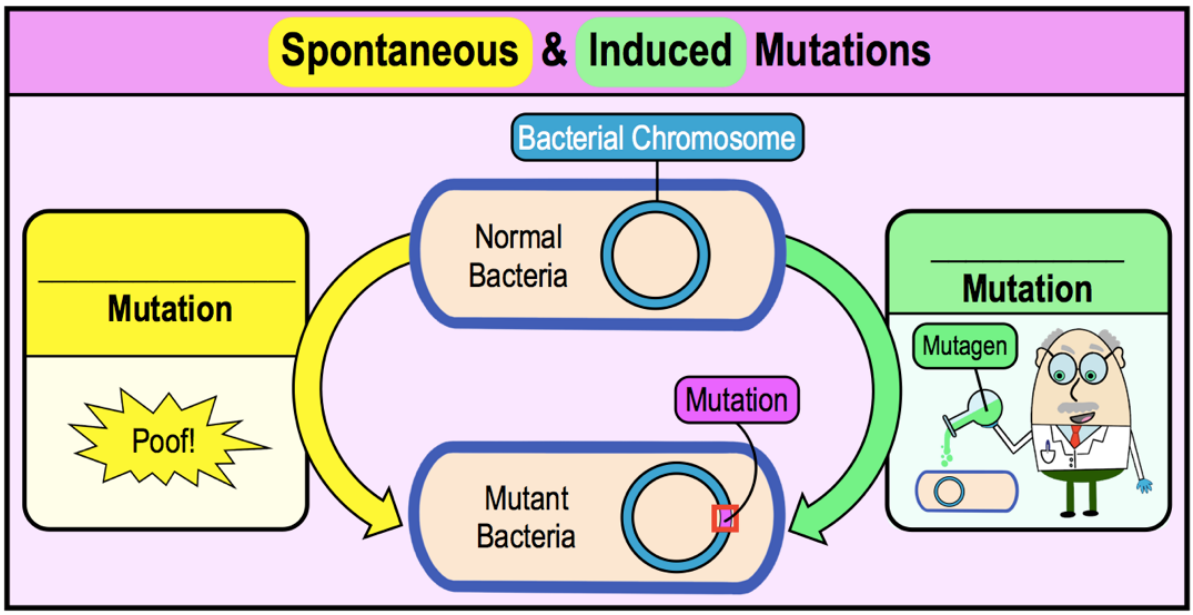
d) Replacement of a codon specifying an amino acid with a redundant codon specifying the same amino acid.

Spontaneous vs. Induced Mutations

●Mutations can occur in one of _____ ways:

1) **Spontaneous Mutations:** random, _____ occurring mutations.

2) **Induced Mutations:** controlled, deliberate mutations _____ by an external source (ex. mutagen).



PRACTICE: _____ mutations occur randomly & _____ mutations are deliberate & occur due to an external source:

a) Point ; Spontaneous.

b) Spontaneous ; Point.

c) Induced ; Mutagens.

d) Induced ; Spontaneous.

e) Spontaneous ; Induced.