

Mutation Types Practice Test

- 1) **Original DNA:** ACCATGCCCCGTTGATTT
 ACCAUG-CCC-CGU-UGA-UUU
 MET-PRO-ARG-STOP
Mutation: ACCATG~~C~~CCCCGTTGATTT
 ACCAUG-CCC-GUU-GAU-UU
 MET-VAL-VAL...DOESN'T STOP

Mutation Type:

Why:

- 2) **Original DNA:** ACCATGCCCCGTTGATTT
 ACCAUG-CCC-CGU-UGA-UUU
 MET-PRO-ARG-STOP
Mutation: ACCATGCCTCGTTGATTT
 ACCAUG-CCU-CGU-UGA-UUU
 MET-PRO-ARG-STOP

Mutation Type:

Why:

- 3) **Original DNA:** ACCATGCCCCGTTGATTT
 ACCAUG-CCC-CGU-UGA-UUU
 MET-PRO-ARG-STOP
Mutation: ACCTTGCCCCGTTGATTT
 ... Never starts

Mutation Type:

Why:

- 4) **Original DNA:** ACCATGCCCCGTTGATTT
 ACCAUG-CCC-CGU-UGA-UUU
Mutation: ACCATGCGCCGTTGATTT
 ACCAUG-CGC-CGU-UGA-UUU
 MET-ARG-ARG-STOP

Mutation Type:

Why:

Mutation Types - Answers

1)

DNA: ACCATGCCCCGTTGATTT

ACCAUG-CCC-CGU-UGA-UUU

MET-PRO-ARG-STOP

Mutation: ACCATGCCCCGTTGATTT

ACCAUG-CCC-GUU-GAU-UU

MET-VAL-VAL...DOESN'T STOP

Mutation Type: Deletion that ultimately causes a **frame shift mutation**

Why: Because the deletion of a single base caused each codon downstream of it to shift. Like taking out a letter from a sentence

Pigs like pie. → Pisl ikep ie

2)

DNA: ACCATGCCCCGTTGATTT

ACCAUG-CCC-CGU-UGA-UUU

MET-PRO-ARG-STOP

Mutation: ACCATGCCTCGTTGATTT

ACCAUG-CCU-CGU-UGA-UUU

MET-PRO-ARG-STOP

Mutation Type: Point mutation - Silent mutation

Why: The single base substitution did not change the amino acid or the protein, so no functional change was made.

3)

DNA: ACCATGCCCCGTTGATTT

ACCAUG-CCC-CGU-UGA-UUU

MET-PRO-ARG-STOP

Mutation: ACCTGCCCCGTTGATTT

... Never starts

Mutation Type: Point mutation – Nonsense mutation

Why: Never starts because there is no ATG/AUG/Met anywhere

4)

DNA: ACCATGCCCCGTTGATTT

ACCAUG-CCC-CGU-UGA-UUU

Mutation: ACCATGCGCCGTTGATTT

ACCAUG-CGC-CGU-UGA-UUU

MET-ARG-ARG-STOP

Mutation Type: Point Mutation – Missense Mutation

Why: A single base change resulted in only one amino acid in the protein being changed.