

DNA Mutations Practice Worksheet

DIRECTIONS: Transcribe and translate the original DNA sequence. Then, do the same for each mutated DNA sequence. Then, determine the consequence, if any, for each mutation, by circling your choice for each question. **You will need a Genetic Code Chart.**

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| Original DNA sequence: | TAC ACC TTG GCG ACG ACT |
| mRNA transcript: | |
| amino acids: | |

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|---|--------------------------------|----------------------|-----------------------|-----------------|-----------------------------|---|----------|
| Mutated DNA sequence #1: | TAC ATC TTG GCG ACG ACT | | | | | | |
| mRNA transcript: <i>(Circle any changes)</i> | | | | | | | |
| amino acids: | | | | | | | |
| Type of mutation (Circle one.) | Point ⇒ | Substitution | | Frameshift ⇒ | Insertion | or | Deletion |
| How did the mutation affect the amino acid sequence (protein)? (Circle one.) | No change | 1 amino acid changed | Premature stop signal | No stop signal | 1 amino acid added/ deleted | All the amino acids changed after the point of mutation | |

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| Mutated DNA sequence #2: | TAC GAC CTT GGC GAC GAC T | | | | | | |
| mRNA transcript: <i>(Circle any changes)</i> | | | | | | | |
| amino acids: | | | | | | | |
| Type of mutation (Circle one.) | Point ⇒ | Substitution | | Frameshift ⇒ | Insertion | or | Deletion |
| How did the mutation affect the amino acid sequence (protein)? (Circle one.) | No change | 1 amino acid changed | Premature stop signal | No stop signal | 1 amino acid added/ deleted | All the amino acids changed after the point of mutation | |

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|---|------------|--------------------------------|-----------------------|-----------------|--------------------------------|----|---|
| Mutated DNA sequence #3: | | TAC ACC TTA GCG ACG ACT | | | | | |
| mRNA transcript: <i>(Circle any changes)</i> | | | | | | | |
| amino acids: | | | | | | | |
| Type of mutation (Circle one.) | Point ⇒ | Substitution | | Frameshift ⇒ | Insertion | or | Deletion |
| How did the mutation affect the amino acid sequence (protein)? (Circle one.) | No change | 1 amino acid changed | Premature stop signal | No stop signal | 1 amino acid added/ deleted | | All the amino acids changed after the point of mutation |

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|---|------------|--------------------------------|-----------------------|-----------------|--------------------------------|----|---|
| Mutated DNA sequence #4: | | TAC ACC TTG GCG ACT ACT | | | | | |
| mRNA transcript: <i>(Circle any changes)</i> | | | | | | | |
| amino acids: | | | | | | | |
| Type of mutation (Circle one.) | Point ⇒ | Substitution | | Frameshift ⇒ | Insertion | or | Deletion |
| How did the mutation affect the amino acid sequence (protein)? (Circle one.) | No change | 1 amino acid changed | Premature stop signal | No stop signal | 1 amino acid added/ deleted | | All the amino acids changed after the point of mutation |

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|---|------------|-------------------------------|-----------------------|-----------------|--------------------------------|----|---|
| Mutated DNA sequence #5: | | TAC ACC TTG GGA CGA CT | | | | | |
| mRNA transcript: <i>(Circle any changes)</i> | | | | | | | |
| amino acids: | | | | | | | |
| Type of mutation (Circle one.) | Point ⇒ | Substitution | | Frameshift ⇒ | Insertion | or | Deletion |
| How did the mutation affect the amino acid sequence (protein)? (Circle one.) | No change | 1 amino acid changed | Premature stop signal | No stop signal | 1 amino acid added/ deleted | | All the amino acids changed after the point of mutation |