

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.**

Original DNA sequence:	TAC ACC TTG GCG ACG ACT
mRNA transcript:	AUG UGG AAC CGC UGC UGA
amino acids:	Met - Trp - Asp - Arg - Cys - Stop

Mutated DNA sequence #1:	TAC ATC TTG GCG ACG ACT						
mRNA transcript: (Circle any changes)	AUG UAG AAC CGC UGC UGA						
amino acids:	Met - Stop - Asp - Arg - Cys - Stop						
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

Mutated DNA sequence #2:	TAC GAC CTT GGC GAC GAC T						
mRNA transcript: (Circle any changes)	AUG CUG GAA CCG CUG CUG A						
amino acids:	Met - Leu - Glu - Pro - Leu - Leu -						
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

Talk about mutation in terms of nitrogen bases
AND amino acids

Mutated DNA sequence #3:		TAC ACC TTA GCG ACG ACT				
mRNA transcript: (Circle any changes)		AUG UGG AAU CGC UGC UGA				
amino acids:		Met - Try - Asp - Arg - Cys - Stop				
Type of mutation (Circle one.)	Point ⇒	Substitution			Frameshift ⇒	Insertion or Deletion
How did the mutation affect the amino acid sequence (protein)? (Circle one.)	Silent mutation 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

Mutated DNA sequence #4:		TAC ACC TTG GCG ACT ACT				
mRNA transcript: (Circle any changes)		AUG UGG AAC CGC UGA UGA				
amino acids:		Met - Try - Asp - Arg - Stop - Stop				
Type of mutation (Circle one.)	Point ⇒	Substitution			Frameshift ⇒	Insertion or Deletion
How did the mutation affect the amino acid sequence (protein)? (Circle one.)	woops! 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

Mutated DNA sequence #5:		TAC ACC TTG GGA CGA CT				
mRNA transcript: (Circle any changes)		AUG UGG AAC CCU GCU GA				
amino acids:		Met - Try - Asp - Pro - Ala -				
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

* To have an amino acid added/ deleted you would need to add/ delete 3 nucleotides