

Biol1107 Armstrong S12 11 am
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Short Answer Questions

UUU } Phe	UCU } Ser	UAU } Tyr	UGU } Cys
UUC } Phe	UCC } Ser	UAC } Tyr	UGC } Cys
UUA } Leu	UCA } Ser	UAA } Stop	UGA } Stop
UUG } Leu	UCG } Ser	UAG } Stop	UGG } Trp
CUU } Leu	CCU } Pro	CAU } His	CGU } Arg
CUC } Leu	CCC } Pro	CAC } His	CGC } Arg
CUA } Leu	CCA } Pro	CAA } Gln	CGA } Arg
CUG } Leu	CCG } Pro	CAG } Gln	CGG } Arg
AUU } Ile	ACU } Thr	AAU } Asn	AGU } Ser
AUC } Ile	ACC } Thr	AAC } Asn	AGC } Ser
AUA } Ile	ACA } Thr	AAA } Lys	AGA } Arg
AUG } Met or start	ACG } Thr	AAG } Lys	AGG } Arg
GUU } Val	GCU } Ala	GAU } Asp	GGU } Gly
GUC } Val	GCC } Ala	GAC } Asp	GGC } Gly
GUA } Val	GCA } Ala	GAA } Glu	GGA } Gly
GUG } Val	GCG } Ala	GAG } Glu	GGG } Gly

Sequence #1

5' ACGGGCCATGTCAACTGCCATCTAG 3'
3' TGCCCGGTACAGTTGACGGTAGATC 5'

Sequence #2

5' ACGGGCCATGTGTTAACTGCCATCTAG 3'
3' TGCCCGGTACAATTGACGGTAGATC 5'

The DNA fragments shown above contain the complete sequence for a small gene. Sequence #1 is a typical gene. Sequence #2 contains a point mutation.

21. Give the sequence and polarity of two DNA primers 6 nucleotides long that would allow you to amplify the entire fragment. (6 pts)

6
① 5' ACGGTC 3' ✓
② 3' TAGATC 5' ✓

22. Assuming the bottom strand is the DNA template used for transcription, what is the amino acid sequence of the protein that is produced by sequence #1? (10 pts)

10
5' ACGGGCCATGTCAACTGCCATCTAG
Met - Ser - Thr - Ala - Ile - Stop

23. For Sequence #2

- a. **On Sequence #2:** circle the nucleotide change that has occurred. (2 pts)
- b. Name the type of mutation that has occurred. (2 pts)
- c. **BRIEFLY** explain how this mutation will affect the protein produced. (3 pts)

0
This mutation will still result in the correct amino acid being produced.

