

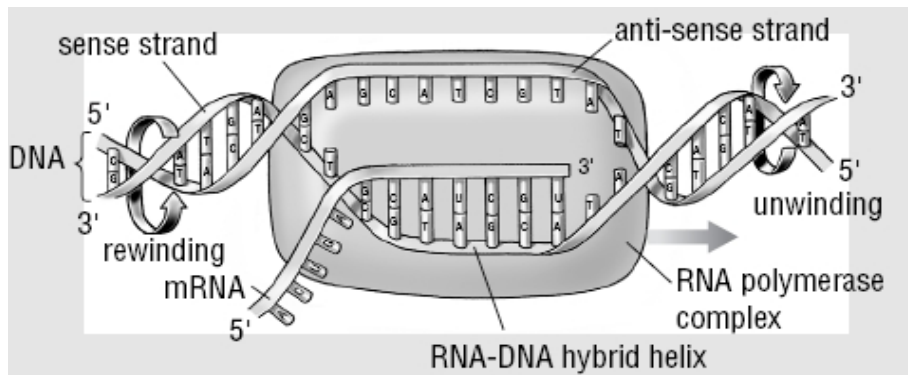
CHAPTER 18	Thought Lab 18.2: Transcription in Reverse Answer Key	BLM 18.2.6A
ANSWER KEY		

Answers to Procedure Questions

- The following outlines one possible nucleotide sequence for the DNA molecule that contains the genes for this polypeptide.

Amino acid	mRNA codon	DNA genetic code
met	AUG	TAC
lys	AAA	TTT
asp	GAU	CTA
asp	GAC	CTG
val	GUU	CAA
leu	CUU	GAA
leu	CUC	GAG
phe	UUU	AAA
leu	CUA	GAT
ala	GCU	CGA
glu	CAA	GTT

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Answers to Analysis Questions

- Your answer should indicate that the genetic code is redundant—that is, more than one codon can code for the same amino acid. Only three codons do not code for any amino acid. The redundancy in the genetic code is extremely valuable to the organism. For example, if a mutation occurs to the DNA and an AAT sequence becomes AAC, the messenger RNA codon transcribed by the original DNA is UUA while the mutated DNA transcribes a UUG codon. The mutation, however, will not be deleterious to the organism because these two codons correspond to the same amino acid—leucine.
- It is advantageous for the cell to keep its DNA inside the nucleus rather than have it move from the nucleus to the ribosomes in the cytoplasm. This reduces the chances of a mutation (damage) occurring to the DNA during this process. As well, if the DNA stays inside the nucleus, only the gene required to synthesize the protein has to be exposed. Once again, this reduces the chances of the DNA being damaged.