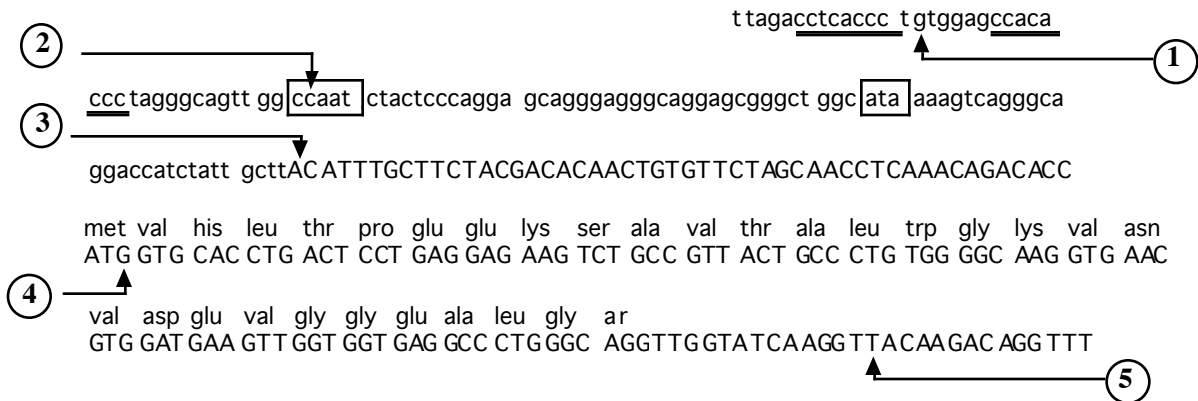


1. (7 points) Here are the first four lines of the beta hemoglobin gene from the globin handout. Five bases are numbered.



The table given below describes a number of bases; complete the table by inserting to the right of each description the number or numbers which fit the description. If you can not find a base which fits the description just insert the words "no base" in the base number column.

base descriptions	base number(s)	base descriptions	base number(s)
base transcribed to mRNA but cut out in the processing of the mRNA		base in the 3' UTR	
base not transcribed		base in a promoter sequence	
base in start translation codon		first base transcribed	
base transcribed but not translated		base transcribed but not cut out in mRNA processing	

2. (1 point) RNA polymerase-I transcribes what kind of gene?

3. (1 points) Why is the 5' - 3' strand given for DNA in the genetics literature?

4. (1 point) What is a cis acting regulatory sequence?