
MODULE 3: TRANSCRIPTION PART II

ANSWER SHEET

- Q1.** What is the coordinate of the first nucleotide that is transcribed? In the DNA sequence, is it an A, C, T or G?
- Q2.** What are the coordinates for the start codon that codes for the first amino acid of the A isoform of the *tra* gene? (Assume reading frame +3.)
- Q3.** The region of the transcript from the 5' cap to the nucleotide just upstream of the start codon is called the 5' untranslated region (5'UTR) because it is part of the transcript that is not translated. How long (in ribonucleotides) is the 5'UTR?
- Q4.** How long (in base pairs) is this 3' untranslated region (3'UTR) as indicated by the cDNA track (in blue)?
- Q5.** Zoom into the 3' end of the FlyBase Gene, near the termination site. What is the longest stretch of A nucleotides that you observe?

- Q6.** Do your findings support the conclusion that the poly(A) sequence observed in the mature mRNA transcript is not in the template DNA?
- Q7.** Scroll up to the 'cDNA BT028774' area. After which coordinate (number in the cDNA) do you see the polyadenylation track (in lower case black letters)?
- Q8.** How many 'A' ribonucleotides have been added to the *tra* mRNA (represented in the cDNA)?
- Q9.** Locate the **AATAAA** termination signal in the cDNA sequence. How many nucleotides 3' of the final 'A' in the signal sequence does the poly(A) run start? (This number is usually between 11-30 nucleotides.)
- Q10.** Which two nucleotides are found just after the end of the first exon of *tra*-RA?
_____ Repeat this determination, identifying the two nucleotides at the start of intron 2 of *tra*-RA. _____
- Q11.** At which base does exon 1 end? What is its coordinate?

Q12. Which two nucleotides are found right before the start of tra-RA exon 2?

Q13. Which two nucleotides are found right before the start of tra-RA exon 3?

Q14. At which base does tra-RA exon 2 begin? What is its coordinate?

Summary Question 1. Describe how the transcript generated by RNA polymerase II (the pre-mRNA) is processed to become mature mRNA, using the sequence signals identified in Module 2.