Bio 97: Genetics
Central Dogma: Transcription and Translation

Transcription
1.) The conversion of a gene into a protein through an RNA intermediate is called ________________.

2.) The process by which a single strand of DNA is used as a template strand to produce a complementary RNA strand is called ________________.

3.) What are the roles of RNA polymerase I, RNA polymerase II, and RNA polymerase III?

4.) How does RNA polymerase know where to start transcription and what direction to move? How does it know when to stop?

5.) The RNA polymerase II does not act alone but in combination with class of proteins called _________________. Together these are called the transcription complex.

6.) During transcription, the DNA region being copied into what will become mRNA is called the ________________ strand.

7.) (True/False) In a given piece of double stranded DNA, strands often switch roles between sense and anti-sense.

8.) During RNA processing, a primary transcript is converted into mRNA. How is the 5’ end modified? How is the 3’ end modified? Why?

9.) What determines where RNA splicing occurs?

10.) What are introns and exons? What are their roles in RNA splicing? Why do we care?
Translation

11.) What is a codon?

12.) The ‘start’ codon is __________ and it codes for __________.

13.) What is the role of tRNA during translation?

14.) What is the eIF4 complex? What does the translation initiation complex consist of (in eukaryotes)?

15.) Once the eIFs leave, the large ________________ is recruited and the initiating methionine tRNA is in the P site.

16.) What are the roles of the A, P, and E sites?

17.) What occurs during the elongation step of translation? What is being elongated?

18.) There is no tRNA for a ‘stop’ codon, instead a __________ will bind to terminate translation.

19.) What is a frameshift mutation?