

Group Questions Ch 9 and Ch 10

Chapter 9.

1. A site in a chromosome where DNA replication begins is
 - a. Promoter
 - b. An origin of replication**
 - c. An operator
 - d. A replication fork
2. In the lagging strand, DNA is made in the direction _____ the replication fork and is made as _____.
 - a. Toward, one continuous strand
 - b. Away from, one continuous strand
 - c. Toward, Okazaki fragments
 - d. Away from, Okazaki fragments**
3. To make a new DNA strand, which of the following is/are necessary?
 - a. A template strand
 - b. Nucleotides
 - c. Heavy nitrogen
 - d. Both a and b**

Chapter 10.

4. Can starting a new exercise program “change your genes,” as one ad promises?
-> **No. because environment only can alter DNA expression and may change its function temporarily. DNA structure does not change from nurture environment. Changing of genes refers to the gene transcription of mRNA to protein (sequence of amino acids), which also means changing in DNA sequence of a gene, or mutation.**

5. List the RNA sequence transcribed from the DNA template sequence

TTACACTTGCTTGAGAGTC
→ **AAUGUGAACGAACUCUCAG**

6. Reconstruct the corresponding DNA template sequence from the partial mRNA sequence

GCUAUCUGUCAUAAAAGAGGA
→ **CGATAGACAGTATTTTCTCCT**

7. Titin is a muscle protein named for its size - its gene has the largest known coding sequence of 80,781 DNA bases. How many amino acids are there?

-> **because a gene is made of 3 bases and 1 amino acids, $80781/3=26927$. There are 26927 amino acids in Titin.**

8. The reading frame begins at a _____ and is read _____.

- a. Promoter, one base at a time
- b. Promoter, in groups of three bases
- c. Start codon, one base at a time
- d. Start codon, in groups of three bases**

9. What is the genetic code?

- a. The relationship between a three-base codon sequence and an amino acid or the end of translation**
- b. The entire base sequence of an mRNA molecule
- c. The entire sequence from the promoter to the terminator of a gene
- d. The binding of tRNA to mRNA

10. The model below represents the central dogma of molecular biology, which describes the unidirectional flow of genetic information during gene expression.

DNA → Pre-mRNA → Mature mRNA → Protein

Which of the following would block mature mRNA from being translated into protein?

- a. A substance that blocks the active site of RNA polymerase.
- b. A substance that prevents the transfer of amino acids to the growing polypeptide chain.**
- c. A substance that causes a mutation in the template strand of DNA
- d. A substance that prevents the removal of noncoding sequences from pre-mRNA