

# BMC – Exercícios

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## Questão 1

What is the function of the enzyme DNA polymerase?

- a. gluing together Okazaki fragments
- b. joining together nucleotides during replication
- c. unzipping” the two strands of DNA

RS: b.

## Questão 2

Okazaki fragments occur with replicating:

- a. both strands
- b. the lagging strand
- c. the leading strand

RS: b.

### Questão 3

Which of the following statements best explains the mechanism for DNA replication?

- a. DNA replication is reductive, because half the total DNA present is copied.
- b. DNA replication is semi-conservative, because each DNA strand serves as a template during replication.
- c. DNA replication is dispersive, because the two resulting DNA molecules are mixtures of parent and daughter DNA.
- d. DNA replication is conservative, because one resulting molecule is identical to the original and the other consists of two new strands.

RS: b.

### Questão 4

In DNA replication, DNA "unwinds" to form two template strands: the leading strand and the lagging strand.

Which of the following statements about these strands is true?

- a. Okazaki fragments are used to synthesize the leading strand of DNA.
- b. The leading strand of DNA is synthesized continuously.
- c. DNA polymerase can only synthesize DNA on the leading strand.
- d. The lagging strand can only be synthesized once the leading strand has been completed.

RS b.

## Questão 5

What enzyme breaks apart the hydrogen bonds between two strands of DNA?

- a. Histone      b. Helicase      c. Exonuclease      d. Endonuclease

RS   b.

## Questão 6

What enzyme replaces RNA primer on the lagging strand with DNA?

- a. Polymerase III   b. Ligase      c. Polymerase I      d. Helicase

RS   c.

## Questão 7

What enzyme will solve the problem of discontinuity in the lagging strand?

- a. Ligase      c. Helicase  
b. Binding proteins      d. Polymerase I

RS   a.

## Questão 8

what is the key element that kept the strands from binding back together once separated?

- a. Binding proteins
- b. Ligase
- c. Helicase
- d. DNA wall

RS a.

## Questão 9

In Meselson and Stahl's experiment, \_\_\_\_\_generation(s) after cells were transferred from heavy-nitrogen medium to light nitrogen medium, all of the DNA was of hybrid density.

RS 1

## Questão 10

In Meselson and Stahl's experiment, \_\_\_\_\_generation(s) after cells were transferred from heavy-nitrogen medium to light nitrogen medium, half of the DNA was of hybrid density.

RS 2

## Questão 11

The main replication polymerase of *E. coli* is DNA polymerase \_\_\_\_\_. The enzyme that breaks the hydrogen bonds at the replication fork is called \_\_\_\_\_. The protein that binds to single-stranded DNA to keep it from kinking up is abbreviated with the three letters \_\_\_\_\_. The short RNA molecule made at the beginning of an Okazaki fragment is called an RNA \_\_\_\_\_. Okazaki fragments are needed for replication on the \_\_\_\_\_ strand. A reverse transcriptase that is involved in replication of the tips of eukaryotic chromosomes is the enzyme \_\_\_\_\_. The end of a eukaryotic chromosome is called the \_\_\_\_\_.

- |            |          |              |            |
|------------|----------|--------------|------------|
| 1 III      | 3 SSB    | 5 lagging    | 7 telomers |
| 2 helicase | 4 primer | 6 telomerase |            |

## Questão 12

The replication of DNA is a complex process; all of the following statements are correct, EXCEPT

- a. On the lagging strand, one RNA primer is required for the beginning of every Okazaki fragment.
- b. There is one replication fork in one replication bubble.
- c. DNA replication is considered to be a semi conservative process.
- d. In order to complete replication, the replication bubbles grow and merge together.

RS: b.

## Questão 13

Using the given information, determine the correct order of the following events during the replication of the lagging strand.

- a. The DNA double helix unwinds.
- b. The Okazaki fragments are joined.
- c. The RNA primase builds an RNA primer on the parent strand.
- d. Nucleotides are added and matched to the parent strand.

RS:  $a \rightarrow c \rightarrow d \rightarrow b$