ONTARIO BIOLOGY, GRADE 12, UNIVERSITY PREPARATION (SBI4U) · UNIT C

Molecular Genetics — Practice Test

Ontario Biology, Grade 12, University Preparation (SBI4U) • 25 questions

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Transcription is the process of making**

- A RNA from DNA
- B Protein from lipid
- C DNA from protein
- D DNA from RNA

Understand It with Pulse | Flag a mistake

2 **Translation is the process of making**

- **A** Protein from mRNA
- **B** DNA from mRNA
- **C** Lipid from protein
- **D** RNA from DNA

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3 **The enzyme that builds an RNA strand during transcription is**

- **A** Reverse transcriptase
- **B** Helicase
- **C** RNA polymerase
- **D** DNA ligase

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4 **A codon is a sequence of how many mRNA bases**

- A Three bases
- B Two bases
- C One base
- D Four bases

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5 **The start codon AUG codes for the amino acid**

- A Glycine
- B Alanine
- C Methionine
- D Tryptophan

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6 **A stop codon signals the ribosome to**

A Unwind DNA

B Start transcription

C Add another amino acid

D Terminate translation

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7 **Which RNA carries the genetic code from the nucleus to the ribosome**

A mRNA

B snRNA

C tRNA

D rRNA only

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8 **An anticodon is found on**

A mRNA

B A ribosome protein

C DNA polymerase

D tRNA

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9 **In eukaryotes, introns are removed from pre mRNA during**

A Splicing

B Translation

C Mutation

D Replication

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10 **A point mutation that changes one base to another is called a**

- A Substitution mutation
- B Frameshift mutation
- C Duplication mutation
- D Deletion mutation

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11 **An insertion or deletion of bases that is not a multiple of three causes a**

- A Silent mutation
- B Frameshift mutation
- C Nonsense mutation only
- D Missense mutation only

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12 **A nonsense mutation creates a**

- A Longer protein always
- B Premature stop codon
- C New chromosome
- D New start codon

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13 **A silent mutation has no effect on the protein because the genetic code is**

- A Universal only
- B Non overlapping only
- C Degenerate
- D Continuous

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14 **Which technology cuts DNA at specific sequences**

A Restriction enzymes

B DNA ligase only

C Gel electrophoresis

D PCR primers

Understand It with Pulse | Flag a mistake

15 **PCR is used to**

A Amplify a specific DNA segment

B Sequence a whole genome quickly

C Insert genes into bacteria

D Separate proteins by size

Understand It with Pulse | Flag a mistake

16 **Gel electrophoresis separates DNA fragments mainly by**

A Size

B Colour

C Temperature

D Charge only

Understand It with Pulse | Flag a mistake

17 **In gel electrophoresis, DNA moves toward the**

A Negative electrode

B Centre of the gel

C Positive electrode

D Well it started in

Understand It with Pulse | Flag a mistake

18 **A plasmid is commonly used in genetic engineering as a**

A Restriction enzyme

B Gel matrix

C Primer

D Vector

Understand It with Pulse | Flag a mistake

19 **Recombinant DNA is DNA that contains**

A Only bacterial genes

B Only introns

C No promoter sequence

D Genes from different sources joined together

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20 **CRISPR Cas9 is best described as a tool for**

- A Editing specific DNA sequences
- B Staining chromosomes
- C Amplifying DNA
- D Counting chromosomes

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21 **Which statement about the human genome is correct**

- A All genes code for proteins
- B Genes are evenly spaced
- C Introns are translated
- D Most DNA does not code for proteins

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22 **Gene expression in a multicellular organism is regulated so that different cells**

A Have different genomes

B Stop transcribing all genes

C Lose unneeded chromosomes

D Express different sets of genes

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23 **A promoter is a DNA sequence where**

A Ribosomes assemble

B Translation begins

C RNA polymerase binds to start transcription

D DNA replication ends

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24 **Which mutation is most likely to be passed to offspring**

- A A skin cell mutation from sunlight
- B A muscle cell mutation
- C A mutation in a red blood cell
- D A mutation in a gamete forming cell

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25 **If an mRNA codon is UUU, the tRNA anticodon that pairs with it is**

- A UUU
- B TTT
- C AAG
- D AAA

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. A
2. A
3. C
4. A
5. C
6. D
7. A
8. D
9. A
10. A
11. B
12. B
13. C
14. A
15. A
16. A
17. C
18. D
19. D
20. A
21. D
22. D
23. C
24. D
25. D

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