Quiz: Alterations of Gene Expression

Part I: True or False: Write **T** or **F**

1. _____ Gene expression is the process by which information in a gene is used to make a protein.
2. _____ All genes in a cell are active at the same time.
3. _____ Environmental factors can influence gene expression.
4. _____ Gene expression can be turned on or off.
5. _____ Changes in gene expression always involve changes to the DNA sequence.
6. _____ Proteins can help regulate gene expression.
7. _____ Different cell types can have different patterns of gene expression.
8. _____ Nutrition and stress can affect gene expression.
9. _____ Gene expression has no effect on an organism's traits.
10. _____ Alterations in gene expression can sometimes lead to disease.

Part II: Matching

Match the term in Column A with the correct definition in Column B.

Column A	**Column B**
11. Gene Expression	A. Factors outside the organism that can affect genes
12. Protein	B. A process that controls whether a gene is active
13. Regulation	C. A molecule made from genetic instructions
14. Environmental Factors	D. The process of using genetic information to make a product
15. Trait	E. A characteristic of an organism

Part III: Multiple Choice: Circle the best answer.

16. What is gene expression?
    a. The copying of DNA
    b. The process of using genetic information to make proteins or other products
    c. Cell division
    d. Mutation of DNA

17. Which of the following can influence gene expression?
    a. Diet
    b. Temperature
    c. Stress
    d. All of the above

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18. Why do muscle cells and nerve cells look and function differently?
    a. They contain different DNA
    b. They express different genes
    c. They have no genes
    d. They are different species

19. Which molecule often helps regulate gene expression?
    a. Water
    b. Protein
    c. Oxygen
    d. Sugar

20. Altered gene expression can affect:
    a. Cell function
    b. Physical traits
    c. Health
    d. All of the above

21. What does it mean when a gene is "turned off"?
    a. The gene is removed from DNA
    b. The gene is not being expressed
    c. The gene is duplicated
    d. The gene changes shape

22. Which statement about gene expression is true?
    a. It is the same in every cell.
    b. It never changes.
    c. It can respond to environmental conditions.
    d. It only occurs in plants.

23. Which of the following is an example of an environmental influence on gene expression?
    a. Sunlight exposure
    b. Nutrition
    c. Stress
    d. All of the above

24. Alterations in gene expression may contribute to:
    a. Development and growth
    b. Adaptation to the environment
    c. Certain diseases
    d. All of the above

25. The main purpose of gene regulation is to:
    a. Ensure genes are used when needed
    b. Destroy DNA
    c. Stop all protein production
    d. Create mutations

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