Name_____

AP Biology
TEXT: *Biology*, Campbell and Reece
7th Edition
Chapter 20

Biotechnology
Thematic Review Guide

1. Define biotechnology.

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2. What is meant by "recombinant DNA technology?"

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3. List some of the organisms we have been modifying for many hundreds of years.

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4. Why are bacteria ideal workhorses for biotechnology?

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5. What are other organisms used in biotechnology?

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6. How does gene cloning differ from human cloning?

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7. Why is DNA cloning considered an important technology?

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8. What are plasmids?

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9. What is the function of restriction enzymes in bacteria?

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10. How do bacteria protect their DNA from the effects of the restriction enzymes?

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11. How do biologists make use of restriction enzymes?

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12. What is a genomic library?

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13. How is cDNA different from typical eukaryote DNA?

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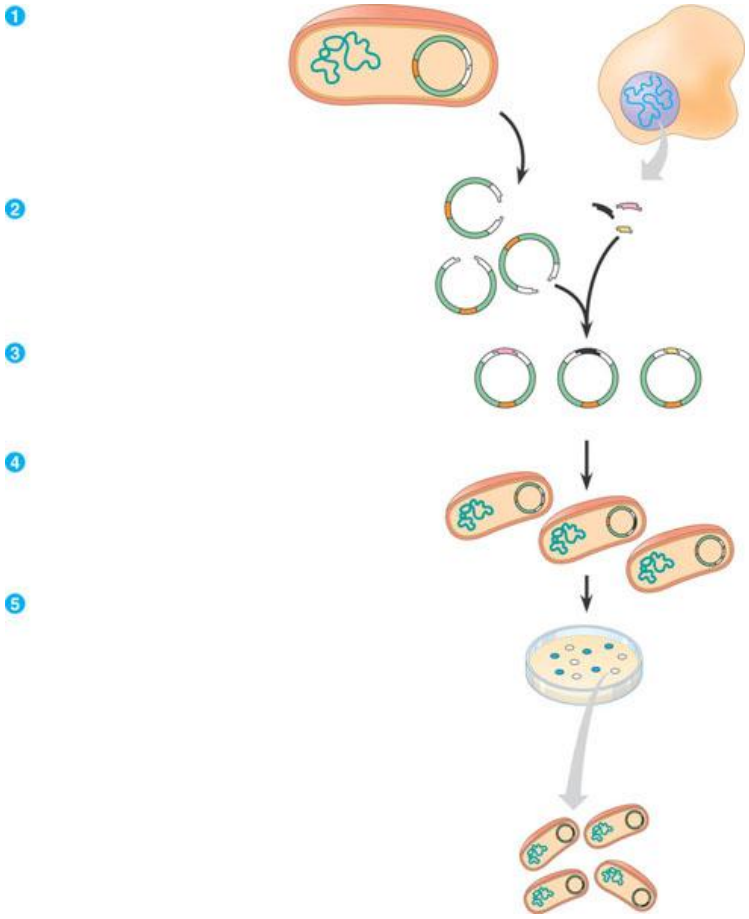
14. Describe the steps involved in cloning a gene.



15. How can transformed bacteria which carry genes of interest be identified and isolated from the majority of non-transformed bacteria? _____

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16. What can be accomplished with Nucleic Acid Hybridization?

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17. What is the purpose of the Polymerase Chain Reaction (PCR)?

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18. List some advantages & uses of the PCR technique.

19. How are DNA fragments of different sizes separated?

20. What is a RFLP? How are they made?

21. What does the technique of Southern Blotting accomplish?

22. What are some other techniques that build on the Southern Blotting technique?

23. What was the goal of the Human Genome Project?

24. List some of the most important things we learned by completing the Human Genome Project. _____

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25. What is the purpose of the Sanger Sequencing Method?

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26. How does the shot-gun approach differ from whole-genome sequencing?

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27. In the future, DNA chips may be used for regular diagnostics. What do the florescent spots indicate when the chip is read? _____

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28. How can DNA technology be used to diagnose a carrier of a genetic disorder?

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29. What is the goal of gene therapy?

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30. How has forensics made use of DNA technology? Give a specific example.

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31. What is currently used by the FBI to do a DNA fingerprint in a criminal investigation?

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32. What technique has been used to modify agricultural plants?

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33. List a few of the traits that have been engineered into agricultural plants? Could any of these pose an environmental threat? _____

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