

Name \_\_\_\_\_

**AP Biology**

**TEXT: *Biology*, Campbell and Reece**

**7<sup>th</sup> 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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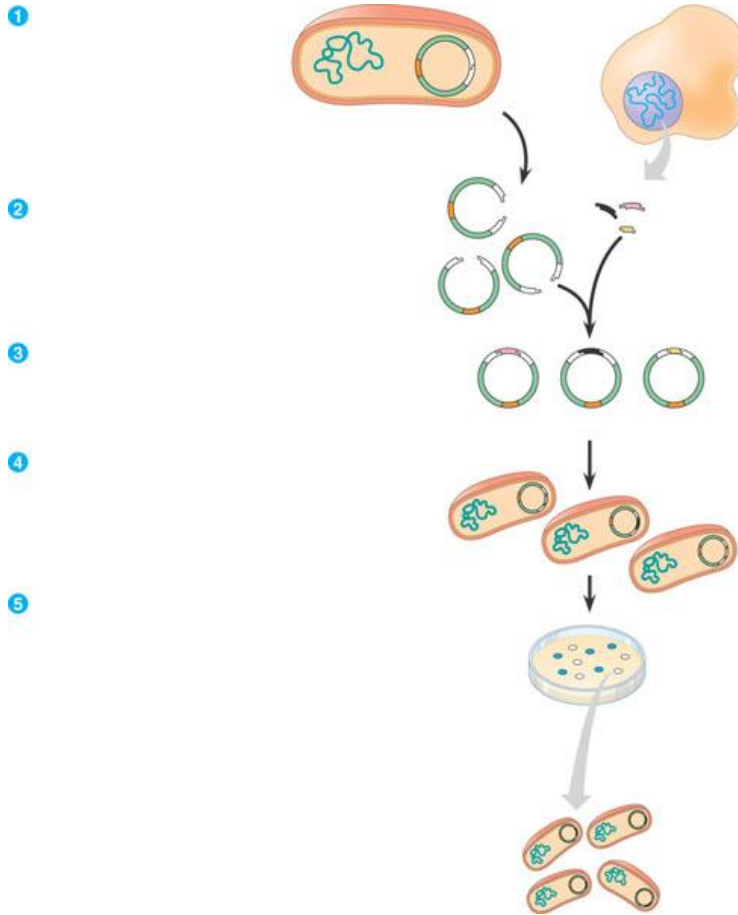
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13. How is cDNA different from typical eukaryote DNA?

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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.

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19. How are DNA fragments of different sizes separated?

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

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21. What does the technique of Southern Blotting accomplish?

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

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

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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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