Reading Guide Packet: Chapter 15 & 16: The Human Genome and Biotechnology
Biology A

Name_____Period_____

Chapter 15.3: Studying the Human Genome

1. What are *restriction enzymes*?

2. How can scientists read DNA base sequences?

3. How are DNA fragments separated after DNA has been cut?

4. Approximately how many genes are in the human genome? Is this a lot compared to other species?

5. What is *genomic imprinting*? How is it related to *epigenetics*?

Chapter 16.1: Changing the Living World

6. What is the advantage of *selective breeding*?

7. How long has *biotechnology* been practiced by humans?

8. What are two important types of *selective breeding*? How are they different?

9. How can breeders increase the genetic variation in a population?

Chapter 16.2: The Process of Genetic Engineering

10. Why is the PCR process useful in studying and manipulating DNA?

11. What is *recombinant DNA*? What does *recombinant DNA* make possible?

12. How are *plasmids* used to place human genes into bacterial cells?

13. What do *genetic markers* make possible?

14. What does the CRISPR tool make possible?

15. How are *transgenic* organisms produced?

16. How is a *clone* related to its parent?

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Chapter 16.3: Applications of Biotechnology

17. Genetic modification of agricultural plants and animals would ideally lead to what outcome?

18. How is 89% of grown corn in the US genetically modified?

19. What is important about *biotechnology* as related to health and medicine?

20. How is making human proteins using *recombinant DNA* technology used in preventing and treating disease?

21. What is *gene therapy*?

22. What can *DNA microarray* technology help scientists understand?

23. How does *DNA fingerprinting* help to identify individuals?

24. What are three ways that *DNA fingerprinting* can be used?

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Chapter 16.4: Ethics and Impacts of Biotechnology

25. What private information about an individual can be revealed by DNA?

26. What is the scientific consensus about the health effects of consuming GM plants?

27. What are some concerns about unintended consequences that a shift to GM farming and ranching may have on agriculture?

28. What is a key ethical question regarding biotechnology?