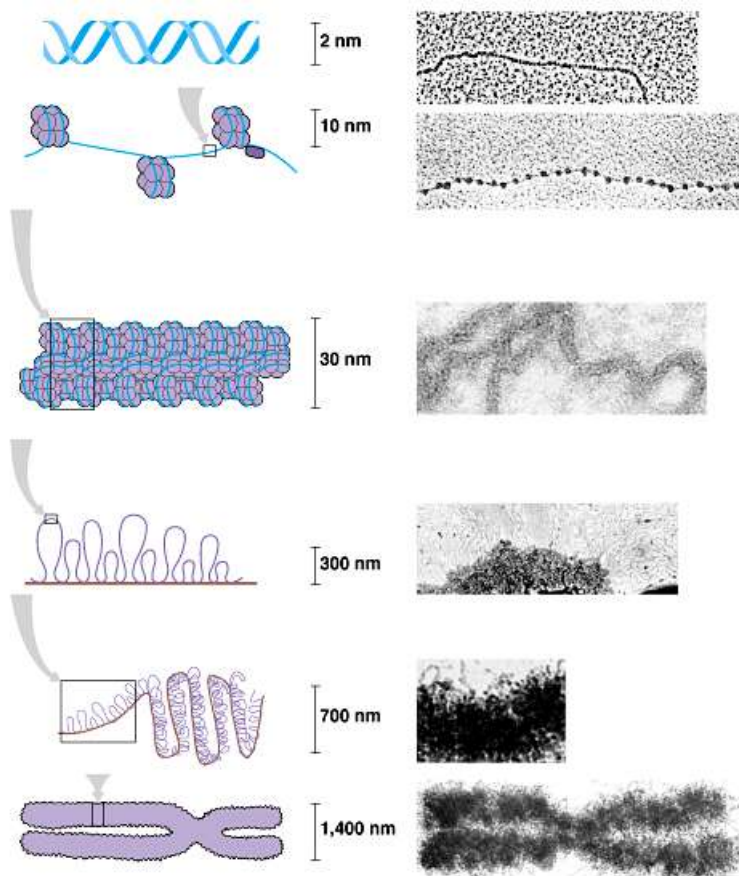


AP Biology
Chapter 19 Guided Reading Assignment

Name _____

1. Define the following terms:
 - a. Chromatin
 - b. Nucleosome
2. Outline the levels of DNA packing in the eukaryotic nucleus below next to the diagram provided.



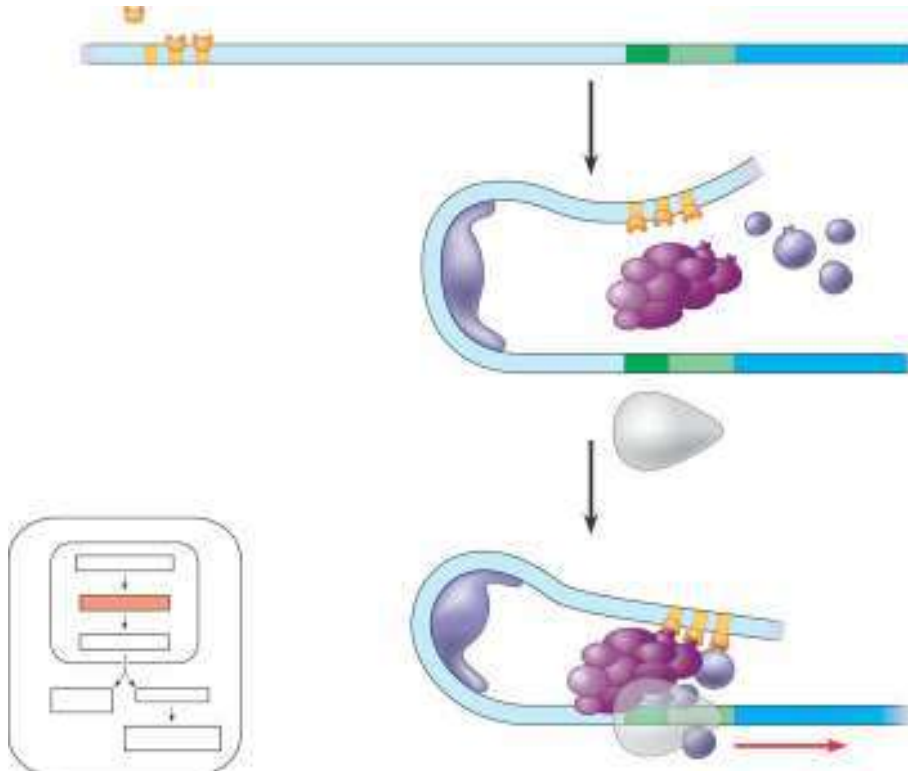
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3. What is the difference between heterochromatin and euchromatin? Which is transcribed?
4. What is cell differentiation?

-
- The diagram illustrates the central dogma of molecular biology, showing the flow of genetic information. It starts with a DNA double helix (blue) being transcribed into a single-stranded RNA molecule (red). The RNA is then translated into a polypeptide chain (represented by a string of colored beads). The polypeptide chain folds into a specific three-dimensional structure (represented by a cluster of blue beads). The final product is a functional protein (represented by a cluster of blue beads). The diagram is divided into two main sections: the top section shows the flow from DNA to RNA to protein, and the bottom section shows the flow from protein to DNA (reverse transcription) and protein to RNA (reverse transcription).

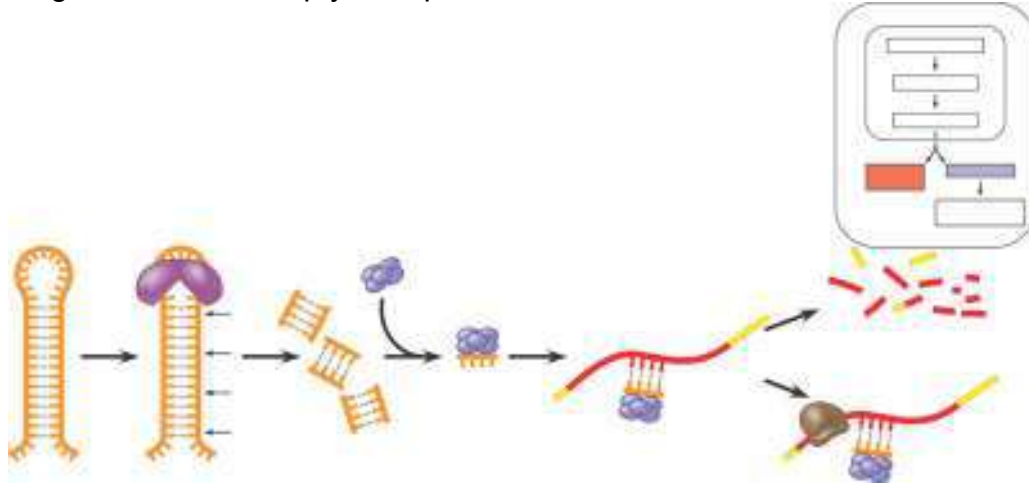
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8. How does methylation relate to genomic imprinting?
9. Define epigenetic inheritance.
10. How do the following control elements assist in regulation?
 - a. Transcription factors
 - b. Enhancers
 - c. Activators
 - d. Repressors
11. Use the diagram below to explain the interactions of enhancers and transcription activators.



12. Explain how RNA processing is a mechanism of post-transcriptional regulation.

13. What role do microRNA's play in post-transcriptional regulation? Use the diagram below to help you explain.



14. What is RNA interference?

15. How does translation provide another opportunity for control?

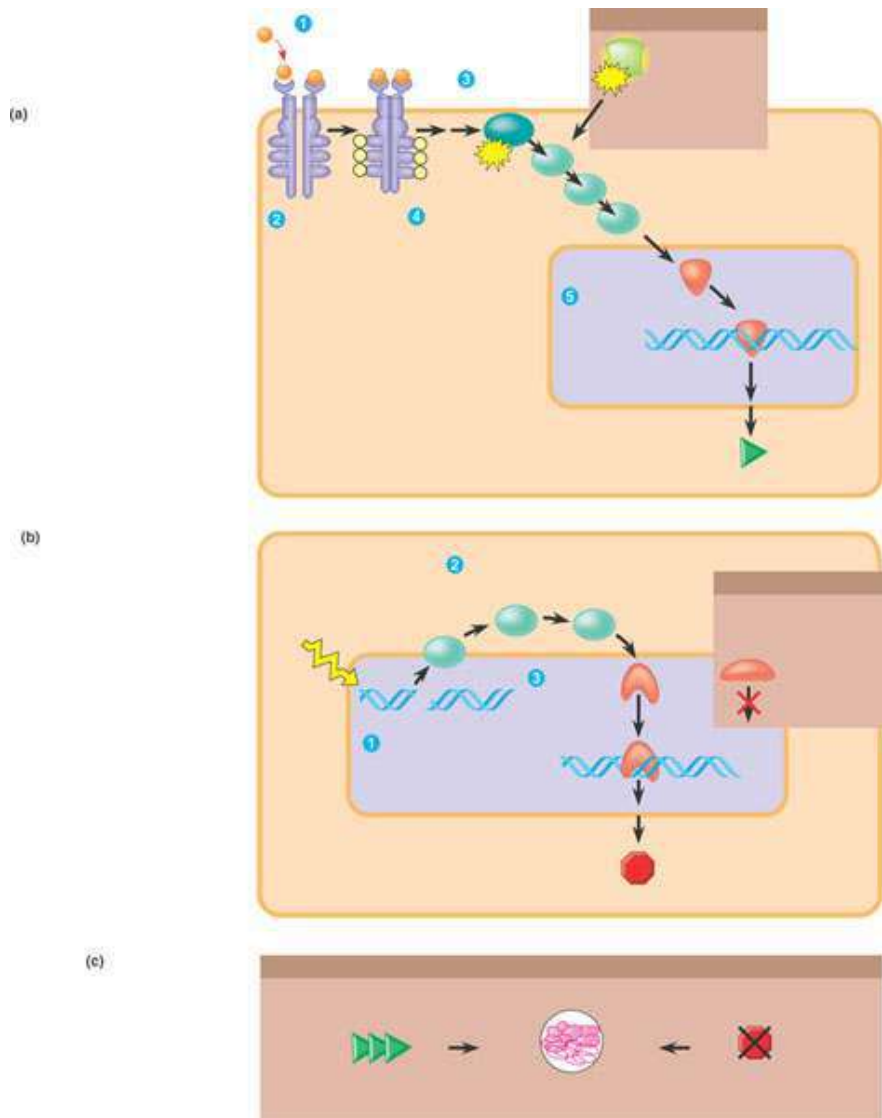
16. What is a proteasomes?

17. What is the difference between oncogenes, proto-oncogenes and tumor-suppressor genes?

18. What is the ras gene?

19. What is the p53 gene?

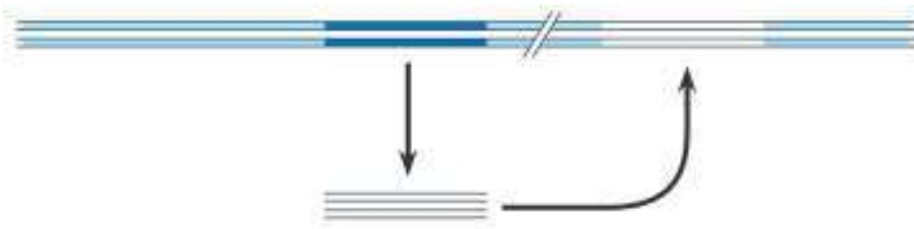
20. Label the diagram below that describes the signaling pathways that regulate cell division.



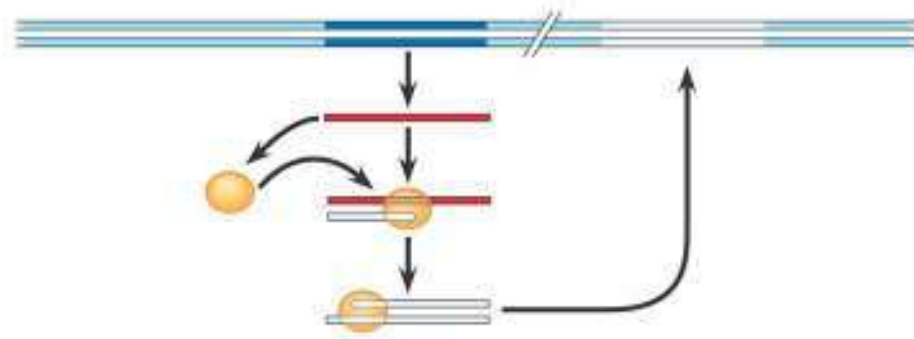
21. Why is said that people inherit predispositions to cancer not cancer itself?

22. What are the types of DNA sequences in the human genome and what % of the genome are they?

23. What is the difference between transposons and retrotransposons. Use the diagram below to help you answer the question.



(a)



(b)

24. What are Alu elements?

25. What are multi-gene families?

26. What are pseudogenes?

27. How can errors during meiosis lead to duplication of genes?

28. What are three ways transposable elements are thought to have contributed to the evolution of the genome?