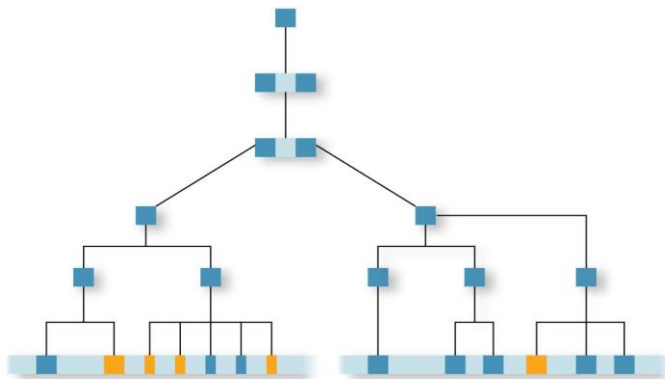


Chapter 21.2, 21.5 and 21.6 Guided Reading: Genomes and Their Evolution  
10ed

1. **Describe** four important examples of information that is available through bioinformatics data on the NCBI website.
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2. **What** is the goal of scientists who study *proteomics*?
3. **How** might a human gene microarray chip be of medical importance.
4. **Describe** how the chromosome banding pattern may explain why there are different haploid chromosome numbers for humans ( $n = 23$ ) and chimpanzees ( $n = 24$ ).
5. **What** is the evolutionary significance of the relationship between the genes on human chromosome 16 and those same blocks of genes on mouse chromosomes 7, 8, 16, and 17?
6. A good summary of several processes involved in genomic evolution can be found in the globin gene families. **Label and explain** these processes as described in Figure 21.14 in your text.



7. Using the concept of a protein domain in your answers, **explain** how *exon shuffling* can lead to new proteins with novel functions.
  
8. **Summarize** the genome relationship between the closely related species of humans, chimpanzees, and bonobos?
  
9. Transposable elements contribute to genome evolution in several ways. **Describe three.**
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10. When comparing genomes, we find that the more \_\_\_\_\_ in sequence the gene and genomes of two species are, the more closely related those species are in their \_\_\_\_\_ history.
  
11. **What** does it mean to say that a gene is *highly conserved*?
  
12. **What** is *Evo-devo*, and how does it relate to understanding the evolution of genomes?
  
13. **Explain** what a *homeobox* is, and describe how it functions.