

# Chapter 24 – Genome Evolution



1. What can be learned from comparing whole genomes?

---

---

---

---

---

2. The first plant genome to be sequenced was \_\_\_\_\_.

3. What is **polyploidy**? What is the difference between **autopolyploidy** and **allopolyploidy**?

---

---

---

4. Describe the 2 methods used in the historical reconstruction of genome evolution.

---

---

---

---

---

5. What often follows formation of an allopolyploid from two different species?

---

---

6. How does polyploidization lead to short-term gene silencing?

---

---

7. What role do transposons play in polyploidization?

---

---

8. What is **aneuploidy**?

---

---

9. What evidence do researchers point to when they claim that gene duplication is a major evolutionary force for genes gaining new function?

---

---

---

---

10. Which human genes seem to be more likely to be duplicated?

---

---

11. Humans have 1 fewer chromosome than the living great apes. Did we lose a chromosome? Explain.

---

---

12. What is the best explanation for our reduced sense of smell compared to the great apes and other mammals?

---

---

---

13. What is the difference between **horizontal gene transfer (HGT)** and **vertical gene transfer (VGT)**? Why was **HGT** more common very early in the life's history?

---

---

---

14. How is it that chimp DNA is 98.7% identical to human DNA (99.2% when just comparing gene sequences encoding proteins) and yet we are SO different?

---

---

15. *A review question:* What roles are played by RNAs that are not translated (i.e. RNA from non-protein coding DNA)?

---

---

---

16. *A review question:* Why is it that the number of genes may not correspond to the number of proteins?

---

---

17. Why is there really no correlation between the number of genes and genome size.

---

---

---

---

---

18. How has genome analysis helped with disease prevention and treatment? Provide an example.

---

---

---

---

19. How has genome analysis helped with crop improvement? Provide an example.

---

---

---

---