

Chapter 21 Genetic Determination of Development

From Single Cell to Multicellular Organism

1. Distinguish between the patterns of morphogenesis in plants and in animals.
2. List the animals used as models for developmental biology research and provide a rationale for their choice.

Differential Gene Expression

3. Describe how genomic equivalence was determined for plants and animals.
4. Describe what kinds of changes occur to the genome during differentiation.
5. Describe the general process by which the ewe Dolly and the first mice were cloned.
6. Describe the two important properties of stem cells. Explain their significance to medicine.
7. Describe the molecular basis of determination.
8. Describe the two sources of information that instruct a cell to express genes at the appropriate time.

Genetic and Cellular Mechanisms of Pattern Formation

9. Describe how *Drosophila* were used to explain the basic aspects of pattern formation (axis formation and segmentation).
10. Describe how homeotic genes serve to identify parts of the developing organism.
11. Provide evidence of the conservation of homeobox patterns.
12. Describe how the study of nematodes contributed to the general understanding of embryonic formation.
13. Describe how apoptosis functions in normal and abnormal development.
14. Describe how the study of tomatoes has contributed to the understanding of flower development.
15. Describe how the study of *Arabidopsis* has contributed to the understanding of organ identity in plants.