

## TEACHER NOTES AND ANSWERS

### Section 5.5

*Organ systems:* organs that carry out similar functions

*Organs:* groups of tissues that work together to perform similar or related functions

*Tissues:* groups of cells that work together to perform a similar function

*Cells:* smallest, most basic structural unit of life; typically become specialized

*homeostasis:* maintained by the interaction of different organ systems that coordinate the body's functions

*Defining characteristics:* ability to divide and renew themselves for long periods of time, remain undifferentiated in form, and can develop into a variety of specialized cell types.

*Possible uses:* treat patients with leukemia and lymphoma, may help cure diabetes, repair or replace damaged organs, and improve current drug testing techniques

*Potential:* Totipotent: can grow into any other cell type; includes only a fertilized egg and cells resulting from the first few divisions

Pluripotent: can grow into any cell type other than a totipotent stem cell

Multipotent: can only grow into cells of a closely related family of cells

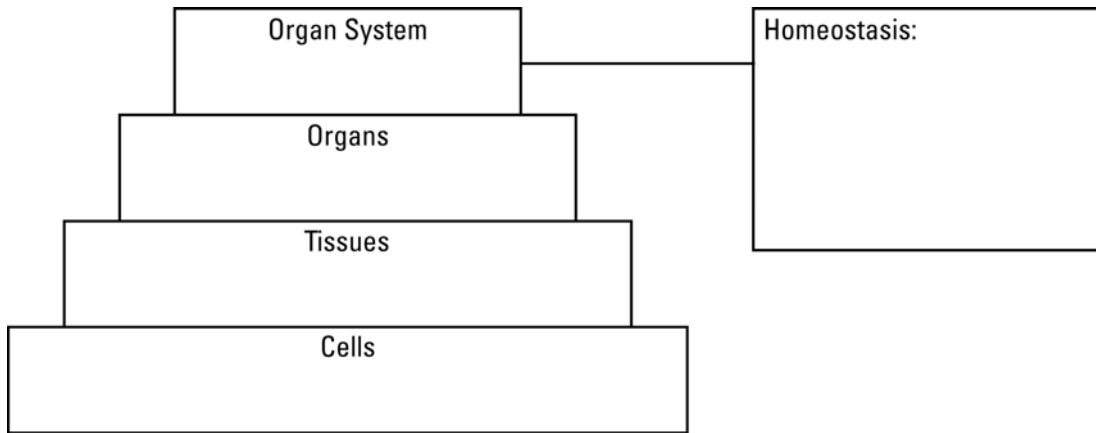
*Origin:*

1. Adult stem cells; partially undifferentiated cells located among the specialized cells of many organs and tissues.

2. Embryonic stem cells: taken from clusters of undifferentiated cells in a 3-to-5-day-old embryo; pluripotent; can be grown indefinitely in culture

Section 5: Multicellular Life

# PowerNotes



Defining characteristics:

- 1.
- 2.
- 3.

Potential:

- 1.
- 2.
- 3.

**Stem Cells**

Possible uses:

Origin:

- 1.
- 2.