LEARNING OBJECTIVES

- Discuss the functions of the various endocrine glands
- Describe the purpose and effects of hormones within the body
- Explain mechanisms of control of hormone levels
- Differentiate between hormonal and humoral control
- Explain common diseases of the endocrine system
ETHICAL DILEMMAS

1. Height is largely a product of genetics, in the absence of disease or malnutrition. If Mom and Dad are below-average height, their children...
3. b
4. a

Test Your Knowledge 12–4 Answers, p. 286
1. c
2. d
3. c
4. d

ANSWERS TO THE CASE STUDY, P. 290
1. He has type 2 diabetes (NIDDM).
2. His kidneys will be damaged if he is not treated.
3. A healthier diet and increased exercise may effectively control type 2 diabetes. A number of medications can also decrease his blood glucose if a change in diet is unsuccessful.

ANSWERS TO REVIEW QUESTIONS, P. 290

Matching
1. f
2. a
3. i
4. e
5. g
6. d
7. j
8. d
9. b
10. h

Multiple Choice
1. a, 2. b, 3. c, 4. b, 5. b, 6. d, 7. d

Fill in the Blank
1. raises
2. increases or regulates
3. Oxytocin
4. adrenal medulla
5. pituitary; adrenal
6. pituitary or hypothalamus
7. thymosin or growth hormone
Short Answer

1. Neurotransmitters are short-lived, short-distance chemical signals secreted by neurons that change the permeability of nearby cells. Hormones are long-lived, long-distance chemical signals secreted by endocrine organs into the bloodstream to travel to distant target cells.

2. Negative feedback is a process that controls hormone levels by preventing the endocrine gland from secreting more hormone, when hormones reach the desired levels. As hormone levels rise, feedback causes the gland to decrease hormone production.

3. Anabolic steroids should be banned for performance enhancement because they give some competitors unfair advantages. More important, they are very powerful hormones with serious side effects, including metabolic and immune disorders. The levels of these hormone are so tightly controlled by the body that interfering with them artificially can cause serious problems.

4. Neural control is the control of an endocrine gland by the nervous system. For example, neurotransmitters released by the sympathetic nervous system signal the release of hormones from the adrenal medulla. Humoral control is control of hormone levels by blood chemistry. For example, the pancreas can measure blood glucose levels and secrete insulin when glucose levels are high and glucagon when glucose levels are low. Input from the nervous system is not necessary for humoral control.