Chapter 14
Stress and Health

Review 14.1: Stress and the Body’s Responses
Instead of studying, Jennifer went out with her friends last night, so she’s poorly prepared for today’s biology exam. Her level of stress is high because she is thinking about, or (1) appraising, this particular (2) stressor, or test, as beyond her coping abilities. Jennifer’s response was first described by Walter (3) Cannon and later refined by physiologists who identified a (4) two track (dual-track) system, in which the (5) sympathetic nervous system directs the (6) adrenal glands to release the stress hormones (7) epinephrine and (8) norepinephrine. These hormones are responsible for Jennifer’s (9) immediate response to stress. At the same time, the brain’s (10) cerebral cortex, by way of the (11) hypothalamus and the pituitary gland, directs the (12) adrenal glands to release the (13) glucocorticoid stress hormones, such as (14) cortisol. These hormones are responsible for Jennifer’s (15) sustained response to stress. When stressed, Jennifer’s autonomic nervous system (ANS) does not distinguish between a difficult test and an attacking lion. Either way, the ANS responds by increasing her (16) heart rate and respiration, diverting blood from digestion to her skeletal (17) muscles, and releasing sugar and fat to prepare her body for (18) fight or (19) flight. Driving home after class, Jennifer notices her car is overheating, then sees flames bursting from under the hood. In response to this new stressor, her heart begins to beat wildly and she feels faint, what Hans (20) Selye called the alarm reaction or the (21) general adaptation syndrome. In the second phase of the syndrome, called (22) resistance, she swerves over to the side of the road and leaps out of her car. The firefighters who extinguish the flames also comfort Jennifer, but the combined stresses of the day have led her to the third stage, (23) exhaustion. A few days later, Jennifer comes down with a wicked cold, which might be an effect of the stress weakening her (24) immune system, including the activity of the (25) lymphocytes and (26) macrophages.

Review 14.2: Smoking: An Illness-Related Behavior
Malcolm has been trying to quit smoking for years, but it’s very difficult. He started smoking during early (1) adolescence for two main reasons: He wanted to look cool and grown-up, so he (2) modeled his behavior after admired actors he’d seen smoking in movies, and he felt pressured by his (3) friends who were already smoking. Today, 20 years later, Malcolm has tried several techniques for quitting (the patch, gum, etc.), but nothing works because he is (4) dependent on nicotine. In fact, he now needs two packs instead of one to get the same effect, because he has developed a (5) tolerance for the drug. Malcolm’s addiction is due to several factors: First, nicotine triggers the release of (6) epinephrine and (7) norepinephrine, which boosts (8) alertness and mental efficiency, abilities that Malcolm feels are important for his work. Second, nicotine stimulates the central nervous system to release (9) neurotransmitters, calm (10) anxiety, and reduce sensitivity to (11) pain. To make matters worse, Malcolm’s family and friends, almost all of whom smoke, (12) will not support his efforts by quitting with him.