

Chapter 7

States of Consciousness

Review 7.1: Biological Rhythms and Sleep

This doctor worked the night shift for 6 months and has now switched to days. Clearly, he has not yet succeeded in resetting his 24-hour **(1) biological clock**. He would be well advised to spend some time outdoors during the day because bright light activates **(2) proteins** in his eyes' **(3) retinas**, which trigger signals to the brain's **(4) suprachiasmatic** nucleus, causing the **(5) pineal** gland to decrease production of the sleep-inducing hormone **(6) melatonin**. Being sleep deprived, this doctor may experience a depressed **(7) immune** system, impaired **(8) performance**, and impaired concentration—not what you want in someone who is treating an illness or injury. So, the doctor finally gets some sleep, passing through the five sleep stages, preceded by the relaxed, awake state characterized by regular **(9) alpha** waves. In Stage 1, he may feel he is falling, a **(10) hypnagogic** sensation, and have false sensory experiences, or **(11) hallucinations**. In Stage 2, his brain generates bursts of rapid activity, or sleep **(12) spindles**. In Stages 3 and 4, **(13) deep** sleep, he experiences large, slow **(14) delta** waves. When waves become rapid and saw toothed and eyes dart about, he has entered **(15) REM** sleep, where he **(16) dreams** of making a major medical breakthrough.

Review 7.2: Drug Abuse

Jack believes that three main influences may contribute to his neighbor Brian's heavy drinking: Brian's parents have a history of alcoholism, so he may have a **(1) genetic** predisposition. Brian's life has been significantly disrupted by the drinking, which suggests an underlying **(2) addiction**. Brian spends a lot of time with friends at the local bar, which suggests that **(3) social** influence is also significant. Since Jack moved in 5 years ago, Brian's drinking has increased, most likely because a few beers have less effect on Brian (he's developed a **(4) tolerance** for alcohol), and his brain is experiencing **(5) neuroadaptation** as it attempts to counteract the effects of the alcohol. In addition, to cope with stress, Brian has at least a few beers every day, indicating that he has developed **(6) psychological** dependence, while his daily cravings for alcohol suggest that he may also have developed a **(7) physical** dependence. Jack is particularly worried about the effects on Brian's mind and body: Alcohol is a kind of psychoactive drug called a **(8) depressant**, because it physically slows down activity in the **(9) central** nervous system, causes Brian's brain to **(10) shrink**, and boosts activity in the brain's **(11) dopamine** reward system. Psychologically, alcohol lowers **(12) inhibitions**, impairs judgment and **(13) memory**, and causes Brian to lose **(14) self-restraint**.