Getting Food to Your Body Cells

In addition to carrying 1)oxygen and 2)carbon 3)dioxide, your bloodstream also carries 4)food particles. These food particles come from your 5)digestive system. The transfer of food from the digestive system takes place at the 6)inner lining of the 7)small 8)intestine. Covering the surface of this lining are millions of tiny fingerlike 9)projections called 10)villi. The singular of “villi” is “villus”. Each villus contains a network of 11)capillaries. Dissolved food particles pass from the intestine into the capillaries by a process called 12)absorption. The food particles are now 13)small enough to enter your body’s cells to supply them with the food they need. The 14)arteries of your 15)circulatory system provide the 16)transportation network.

There are similarities between the 17)villi in the intestine and the 18)alveoli in the lungs. Like alveoli, villi have 19)thin walls that particles pass through to get to the circulatory system. Both alveoli and villi consist of tiny projections, and both occur in 20)huge numbers. This greatly increases the 21)surface 22)area that is in contact with capillaries, 23)without taking up a large amount of space in the body.

Getting Rid of Waste from the Blood

Getting food and oxygen to your cells is only one half of the equation for good health. Your body must also get rid of 24)wastes. 25)Filtering waste materials from the 26)blood is the main function of another system. This is the 27)excretory system. The excretory system is made up of the lungs, skin, kidneys, and large intestine. We will look more at the excretory system later.

Homeostasis

Your body is constantly 28)responding to changing 29)external conditions and making the appropriate 30)adjustments. Your body systems also make constant adjustments to maintain a 31)stable 32)internal 33)environment for your 34)cells. This process is known as 35)homeostasis. It occurs 36)automatically, usually without you even being aware of it. For example, no matter whether it is hot or cold outside, the inside of our bodies remains at the same 37)temperature of about 38)37˚C (98.6 ˚F) all year round. A change in body temperature of as little as 39)0.5˚C can make us feel either feverish or chilled. Nearly 90 percent of your body heat is lost through the 40)skin. Most of the rest of your body heat is lost through your 41)lungs.

When you get cold, you might shiver. Your quivering muscles 42)generate 43)heat. You may also get goosebumps on your skin. These bumps are produced by the 44)contraction of small muscles in the skin that make your hairs stand on end. In animals with a thick coat of hair, fluffing up the body hair helps 45)reduce 46)heat 47)loss by improving 48)insulation. Another example of your body making adjustments to maintain homeostasis is what happens when you 49)exercise. When you are hot your body tries to cool you down. You get flushed and red because tiny 50)blood 51)vessels in your skin 52)expand. This increases the blood flow near the skin surface where 53)heat can be lost to the outside. 54)Sweating helps to cool your body as the moisture 55)evaporates from your skin surface.

Your body’s response to stimuli are 56)coordinated by the 57)nervous system and the 58)endocrine system. The nervous system is made up of the brain, the spinal cord, and nerves. The endocrine system is a set of 59)glands that produce 60)chemical 61)messengers called 62)hormones. These systems can be compared to the traffic lights and speed limits that keep city traffic moving smoothly. If there were no traffic lights or speed limits, there would be chaos in the streets. In the body, a number of factors can 63)influence the smooth working of the organ systems. 64)Diet, 65)exercise, 66)drugs, 67)injury, and 68)disease can affect body systems and disrupt 69)homeostasis. In some people, an inherited disorder leaves the body unable to control particular functions.

To keep your body 70)temperature 71)stable, your nerves, muscles, and blood all function together. Your 72)nervous system monitors conditions outside the body through temperature receptors in your skin. Information from temperature receptors in your skin goes to the heat-regulating centre of your brain, called the 73)hypothalamus. Responding to this information, the brain sends 74)nerve signals to your 75)muscles, 76)skin, and 77)blood 78)vessels. Working together your muscles, skin, and blood vessels adjust your 79)blood 80)flow and 81)muscle 82)activity, causing your body to 83)increase its heat production or 84)reduce its heat loss.