Latin words, formed the basis for the language of anatomy and physiology that persists today. (The names of some modern medical and applied sciences are listed on pages 26–28.)

Much of what is known about the human body is based on *scientific method*, an approach to investigating the natural world. It is part of a general process called scientific inquiry. Scientific method consists of testing a hypothesis and then rejecting or accepting it, based on the results of experiments or observations. This method is described in greater detail in Appendix B, Scientific Method (p. 578), but it is likely that aspects of its application are already familiar to you. Imagine buying a used car. The dealer insists that the car is in fine shape, but you discover that the engine doesn't start. That's an experiment! It tests the hypothesis: If this car is in good shape, then it will start. When the car doesn't start, the wary consumer rejects the hypothesis and doesn't buy the car.

Rather than giving us all the answers, science eliminates wrong explanations. Our knowledge of the workings of the human body reflects centuries of asking questions, and testing, rejecting, and sometimes accepting hypotheses. New technologies provide new views of anatomy and physiology, so that knowledge is always growing. One day you may be the one to discover something previously unknown about the human body!

PRACTICE

1. What factors probably stimulated an early interest in the human body?
2. What kinds of activities helped promote the development of modern medical science?

1.2 | Anatomy and Physiology

Anatomy (ah-nat′o-me) is the branch of science that deals with the structure (morphology) of body parts—their forms and how they are organized. **Physiology** (fiz″e-ol′o-je), on the other hand, concerns the functions of body parts—what they do and how they do it.

The topics of anatomy and physiology are difficult to separate because the structures of body parts are so closely associated with their functions. Body parts form a well-organized unit—the human organism—and each part functions in the unit's operation. A particular body part's function depends on the way the part is constructed—that is, how its subparts are organized. For example, the organization of the parts in the human hand with its long, jointed fingers makes it easy to grasp objects; the hollow chambers of the heart are adapted to pump blood through tubular blood vessels; the shape of the mouth enables it to receive food; and teeth are shaped to break solid foods into small pieces (fig. 1.2).

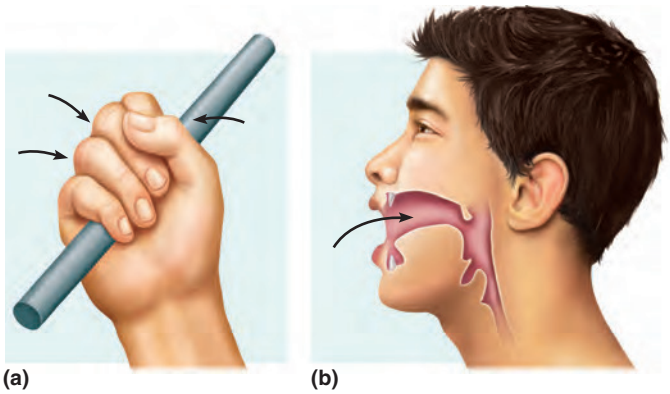

FIGURE 1.2 The structures of body parts make possible their functions: **(a)** The hand is adapted for grasping, **(b)** the mouth for receiving food. (Arrows indicate movements associated with these functions.)

As ancient as the fields of anatomy and physiology are, we are always learning more. For example, researchers recently used imaging technology to identify a previously unrecognized part of the brain, the planum temporale, which enables people to locate sounds in space. Many discoveries today begin with

CAREER CORNER
Emergency Medical Technician

The driver turns a corner and suddenly swerves as a cat dashes into the road. She slams on the brakes but hits a parked car, banging her head against the steering wheel. Onlookers call 911, and within minutes an ambulance drives up.

The driver of the ambulance and another emergency medical technician (EMT) leap out and run over to the accident scene. They open the driver side door and quickly assess the woman's condition by evaluating her breathing, taking her blood pressure and pulse. She is bleeding from a laceration on her forehead, and is conscious but confused.

The EMTs carefully place a restraint at the back of her neck and move her onto a board, then slide her into the ambulance. While one EMT drives, the other rides in the back with the patient and applies pressure to the cut. At the hospital, the EMTs document the care provided and clean and restock the ambulance.

EMTs care for ill or injured people in emergency situations and transport patients, such as from a hospital to a nursing home. The work is outside and inside and requires quick thinking as well as strength. Requirements vary by state, but all EMTs must be licensed. Basic EMTs take 120–150 hours of training; paramedic EMTs take 1200–1800 hours of training. Paramedics may give injections, set up intravenous lines, and give more medications than can basic EMTs.