A Closer Look: The History of Anatomical Science and Scientists

Much of the early study of gross anatomy and physiology comes from Aristotle, a Greek philosopher. Aristotle believed that every organ has a specific function and that function is based on the organ’s structure. Most of Aristotle’s ideas were based on the dissection of plants and animals. He never dissected a human body.

In the third century BC, Herophilus founded the first school of anatomy and encouraged the dissection of the human body. He is credited with demonstrating that the brain is the center of the nervous system. It was a Greek physician, Galen, however, who is credited with the creation of the first standard medical text expanding on Aristotle’s ideas. Galen was the first to discover many muscles and the first to find the value in monitoring an individual’s pulse. Galen never performed human dissections and many of his theories were later proven wrong.

The first medical schools were founded in the Middle Ages; however, instructors at this time were hesitant to question the theories and beliefs founded by the early Greeks such as Aristotle and Galen. As a result, very few ideas or discoveries were made in the medical field in the Middle Ages.

During the Renaissance, however, interest in anatomy was renewed due in part to the work of artist Leonardo da Vinci, who studied the form and function of the human body. It was during this period in history that the first systematic study of the structure of the human body was made. Many of these early scientists were hindered in their pursuit of knowledge of the human body because it was believed by many that human dissections were immoral and illegal. For example, Andreas Vesalius, a founder of modern anatomy, was sentenced to death because of his anatomical dissections of humans.

In the seventeenth century, the invention of the microscope aided in new anatomical discoveries and research. Scientists could now see structures that were invisible to the naked eye. Robert Hooke’s investigation of cork under the microscope was the foundation of the theory that the cell is the basic unit of life. This theory was later proved and expanded on by other scientists in the eighteenth century as technological advances continued to improve.

Advances in technology have continued into today and new anatomical and physiological discoveries are still being made. With the mapping of the human genome, completed in 2003, the complete genetic code has been documented. It is
hoped that this knowledge will enable discoveries into disease processes and the development of cures for many of the diseases that continue to plague our society. The use of new types of medical imaging, such as computerized scanning and digitalized photography, has helped researchers make new discoveries about the body.

These technological advances combined with a growing focus on two other factors that influence the body—human behavior and the environment creates limitless opportunities for future research. For example the development of heart disease, the leading cause of death in the United States, is associated with certain human behaviors including a sedentary lifestyle, poor diet, and smoking tobacco. Research is ongoing to help people identify what lifestyle changes they can make to reduce their risk. Cancer, the second leading cause of death in the United States, is linked to some of the same human behaviors. However, the role of carcinogens found in the environment is also being examined as an important factor in the development of cancer.

Use key words to search the Internet for new discoveries related to a particular body system and the scientists who made those discoveries.

Review Questions I

1. Who is credited with the earliest study of gross anatomy? What did he discover?
2. Who founded the first school of anatomy and encouraged human dissection?
3. What historical time period saw the creation of the first medical schools, but did not see many new medical discoveries?
4. The development of what tool in the seventeenth century led to significant advances in anatomical research and why?
5. Describe how technological advances have contributed to the study of anatomy and physiology in the 21st century.
6. How do recent scientific discoveries impact society? What are the implications for the environment?