

Franklin Paine Mall

Franklin Paine Mall was born into a farming family in Belle Plaine, Iowa, on 28 September 1862. While he attended a local academy, an influential teacher fueled Mall's interest in science. From 1880-1883, he studied medicine at the University of Michigan, attaining his MD degree in 1883. William J. Mayo, who later became a famous surgeon and co-founder of the Mayo Clinic in Rochester, Minnesota, was a classmate of Mall's. Throughout his studies at Michigan, he was influenced by Corydon L. Ford, a professor of anatomy, Victor C. Vaughn, a biochemist and bacteriologist, and Henry Sewall, a physiologist.

After completing his degree, Mall moved to Heidelberg to study ophthalmology. However, in 1884, he moved to Leipzig to follow his growing interest in research. In Leipzig he became a student of embryologist Wilhelm His and met William H. Welch, future dean of Johns Hopkins University School of Medicine. Under His, Mall completed a study of the thymus that contradicted His's earlier work. He also helped with the development of a collection of human embryos. After the completion of his thymus study and on the advice of His, Mall moved to physiologist Carl Ludwig's lab. There Mall studied the structure of the small intestine.

In 1886 Mall left for America and applied for a fellowship in the department of pathology at the Johns Hopkins Hospital. Mall, in collaboration with William S. Halsted, continued his study of the intestines and also the anatomy and physiology of the stomach. Mall also studied the microscopic structure of connective tissue, which led his research partner Halsted to develop a surgical suturing method for the intestine.

In 1889 Mall was offered an adjunct professorship of anatomy at Clark University in Worcester, Massachusetts. At Clark, Mall used the Born wax-plate method to construct a model of an early human embryo, the first in the United States. He also developed an embryological research program. In 1892 Mall left for a professor of anatomy position at the school of medicine at the University of Chicago.

With the opening of the Johns Hopkins University School of Medicine in 1893, William Welch appointed Mall head of the department of anatomy. At Johns Hopkins Mall's research focused at first on the gross structure of the spleen and liver. He worked with a number of researchers, including Ross G. Harrison, Florence R. Sabin, George L. Streeter, Warren H. Lewis, and Herbert M. Evans. Mall also began to reform the teaching of anatomy in the United States and was able to do so because of the limited restraints at Johns Hopkins. His teaching included fewer lectures and more opportunities for students to learn for themselves through dissections, research, and advice from instructors. The "learning by doing" teaching methods developed by Mall and others at Johns Hopkins were implemented at a number of universities. While at Johns Hopkins, Mall continued to collect human embryos, which led to research on the development of the intestines, body cavities, the diaphragm, and the abdominal walls.

In 1894 Mall married Mabel Glover, who was one of three female students in Mall's first class at Johns Hopkins. The Malls later had two daughters. In 1900 he co-founded the American Journal of Anatomy with Charles S. Minot of Harvard and George S. Huntington of Columbia University. He served from 1906-1908 as president of the American Association of Anatomists. From 1910-1912 Mall edited two volumes of the Handbook of Human Embryology with Franz Keibel and contributed three chapters. Mall also edited the first six volumes of the Carnegie Institution of Washington's Department of Embryology's Contributions to Embryology.

In 1913 Mall had appealed to the Carnegie Institution to create a department of embryology that

would be housed at Johns Hopkins. He received a \$15,000 grant that established the department, which Mall chaired until his death in 1917. Mall's small collection of human embryos grew rapidly so that by 1916 over 500 persons had contributed the hundreds of specimens. Even the State Board of Public Health for Maryland helped by instructing physicians to send any specimens to the collection. Mall gave his own embryo collection to the department and led the lab until his death in Baltimore, Maryland, on 17 November 1917. The collection serves as a permanent tribute to Mall's contributions in embryology.

Sources

1. Corner, George W. "Mall, Franklin Paine." *Dictionary of Scientific Biography* 9: 55-58.
2. Maienschein, Jane, Marie Glitz, and Garland E. Allen, eds. *Centennial History of the Carnegie Institute of Washington, Volume V. The Department of Embryology*, especially chapters 1-2. Cambridge: Cambridge University Press, 2004.