

The Jackson Laboratory ^[1]

By: Raup, Christina Keywords: Laboratories ^[2] Mice ^[3] Genetics ^[4]

The Roscoe B. Jackson Laboratory, known commonly in the scientific field as the Jackson Laboratory, was founded by [Clarence Cook Little](#) ^[5] in May 1929. The lab has been pivotal in research with [in vitro](#) ^[6] [fertilization](#) ^[7], teratomas, gene replacement therapy for [birth defects](#) ^[8], and more because its researchers have focused from the beginning on developing the [mouse](#) ^[9] as a [model organism](#) ^[10]. Mice were chosen by researchers at Jackson as the best available model for genetic research, and today genetically uniform strains of mice developed at the lab are used in laboratories all over the world. Located at Bar Harbor on Mount Desert Island in Maine, the Jackson Laboratory focuses today on cancer research using [mouse](#) ^[9] genomics.

Little was a Harvard graduate and became president of the University of Maine in 1922. While studying at Harvard, Little established mammalian genetics as a scientific field with which he wanted to tackle the cancer problem. While university president, Little established a summer science program in which he took science students on field trips to Bar Harbor to study biology. In 1925 Little was appointed president of the [University of Michigan](#) ^[11], but he returned to Maine in 1929 to establish the Jackson Laboratory. He chose Bar Harbor as its location for several reasons: the coastal climate was excellent for raising animals; he felt the local residents possessed a strong work ethic; and a generous amount of land had been donated to build the laboratory by George B. Dorr. Though Little originally intended to name the Laboratory for Dorr's father, Charles H. Dorr, the death in 1929 of one of the donors, Roscoe B. Jackson, prompted the decision to name the laboratory in Jackson's honor, instead.

A major portion of the Jackson Laboratory's funding came from several wealthy Detroit patrons, including Edsel Ford and Richard Hudson Webber. However, since the laboratory opened only months before the Great Depression, its first years were a financial struggle. During the 1930s, the laboratory's mission centered on determining the genetic basis for treating, curing, and preventing human disease. It was also fully committed to providing services and genetic resources to scientists around the world and aimed at educating the next generation of scientific researchers. These remain the laboratory's goals, and are provided on its website (www.jax.org ^[12]).

Little remained director of the Jackson Laboratory until he retired in 1956. His early researchers included [William Singler Murray](#) [13], [Leonell Clarence Strong](#) [14], and [Elizabeth Fekete](#) [15]. Early research focused on the genetic aspects of cancer and radiology, with particular effort spent refining strains of inbred mice that possessed particular mutations of interest that could help Little and his colleagues in their research. Their work touched on a variety of subjects, including early [embryogenesis](#) [16], growth, histogenesis, teratogenesis, pathogenesis, normal and abnormal physiology, aging patterns, and reproductive behaviors. One of the early discoveries made at the Jackson Laboratory was a [mouse](#) [9] mammary tumor agent that passed from mothers to nursing mice. The factor was passed to all mice that suckled from an affected mother, regardless of whether they were her progeny or not.

One of the most important areas of research conducted at the Jackson Laboratory involved teratomas. These "monster" tumors, comprised of tissues that are derived from all three [germ layers](#) [17], have intrigued physicians and pathologists for centuries. More recently, they have provided the foundation for the derivation of [stem cells](#) [18]. In the 1950s and 1960s, researchers [LeRoy C. Stevens](#) [19] and [Barry Pierce](#) [20] investigated teratomas and their cancerous counterparts, teratocarcinomas, in mice, and were eventually able to conclusively demonstrate that cancerous growths possess [stem cells](#) [18]. These cells are responsible for the unchecked growth seen in tumors, and eventually led to the discovery of human embryonic carcinoma cells.

The laboratory has had significant funding contributions from the [National Institutes of Health](#) [21] and the [National Cancer Institute](#) [22]. Its current president is [Richard Woychik](#) [23].

Sources

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