

# Edward B. Lewis

Edward B. Lewis studied embryonic development in *Drosophila*, including the discovery of the cis-trans test for recessive genes, and the identification of the bithorax complex and its role in development in *Drosophila*. He shared the 1995 Nobel Prize in Physiology or Medicine with Christiane Nüsslein-Volhard and Eric F. Wieschaus for work on genetic control of early embryonic development.

Edward B. Lewis was born on 20 May 1918 in Wilkes-Barre, Pennsylvania, to Laura Mary and Edward Butts Lewis, a watchmaker and jeweler. By the time he was a freshman in high school Lewis had a budding interest in biology. He ordered *Drosophila* cultures from an advertisement in the back of *Science Magazine* and began rudimentary studies of the organism. Lewis's interests were not confined to science alone. He was also an accomplished flautist, and took a music scholarship to Bucknell College. After a year at Bucknell he decided to transfer to the University of Minnesota, in large part because of the inexpensive, twenty-five dollar out-of-state tuition.

At the University of Minnesota, he was encouraged by a genetics professor, Clarence Paul Oliver, to continue his hobby of *Drosophila* research. Lewis was granted a desk in Oliver's lab to continue his research. It took him just two years to receive a Bachelor of Arts degree in biostatistics. A recommendation from Oliver helped Lewis obtain a teaching fellowship at the California Institute of Technology as a graduate student under Alfred Sturtevant. Lewis published many papers during his time as a graduate student, but his most important paper outlined the cis-trans test, also known as the complementation test. This test is used to determine whether two independent, recessive mutations are located on the same gene or separate genes. This discovery led Lewis to a PhD from the California Institute of Technology in 1942. The next year, in the midst of World War II, Lewis enlisted in the Army to help the American war effort. As a Captain in the Army, Lewis served three years as a meteorologist and an oceanographer in Hawaii and in Okinawa, Japan. After the war ended Lewis returned to the California Institute of Technology in 1946 as an instructor, a position promised him by the California Institute of Technology President Robert Millikan in 1942. In 1946 he married Pamela Harrah, an arrangement encouraged by George Wells Beadle who hoped to keep Harrah in his lab so she could continue to maintain his stock *Drosophila* collection. Regardless of the motivation, the marriage between Lewis and Harrah stuck.

In 1956 Lewis became a Professor of Biology at the California Institute of Technology. One of Lewis's most famous *Drosophila* mutants was known as the four-winged fly. Due to a mutation in the bithorax complex—Lewis's favorite gene complex—the body segments were transformed and an extra set of wings developed. Lewis was known throughout his career as a maverick scientist, one who published rarely and believed in practicing science for the sake of science. At the beginning of the nuclear age, in 1957, low-level radiation was thought to be safe. Lewis disagreed and published a paper the same year, "Leukemia and Ionizing Radiation," outlining the negative effects of low-level radiation. He was able to demonstrate a correlation between the accepted "safe" levels of radiation and increased cases of leukemia. Because of this paper, he was forced to appear before the Joint Committee on Atomic Energy to testify on his findings.

In 1966 Lewis was named the Morgan Professor of Biology and became an emeritus professor at the California Institute of Technology in 1988. His many awards and memberships include becoming a Rockefeller Foundation fellow in 1947 and a guest professor at the Institute of Genetics at the University of Copenhagen, Denmark, from 1975 to 1976. He was awarded the Thomas Hunt Morgan Medal in 1983, won the Gairdner Foundation International Award in 1987, and the Wolf Foundation Prize in Medicine for 1989. He won the Rosenstiel Award and the National Medal of Science in

1990, the Albert Lasker Basic Medical Research Award in 1991, the Louisa Gross Horwitz Prize for 1992, and culminated with the Nobel Prize in Physiology or Medicine for 1995. He was a member of the National Academy of Sciences, the Genetics Society of America, the American Philosophical Society, the American Academy of Arts and Sciences, a foreign member of the Royal Society of London, and an honorary member of the Genetical Society of Great Britain.

On 21 July 2004 Lewis succumbed to prostate cancer. He had continued to work through his illness until his final days.

## Sources

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