

Thomas Hunt MORGAN Ph.D. ID: I13120

Sex: M

Birth: 25 Sep 1866 in Lexington, Kentucky

Death: 4 Dec 1945 in Pasadena, California

1. Awarded the Nobel Prize for Medicine in 1933

http://nobelprize.org/nobel_prizes/medicine/laureates/1933/morgan-bio.html

Thomas H. Morgan

The Nobel Prize in Physiology or Medicine 1933

Thomas Hunt Morgan was born on September 25, 1866, at Lexington, Kentucky, U.S.A. He was the eldest son of **Charlton Hunt Morgan**. He was educated at the University of Kentucky, where he took his B.S. degree in 1886, subsequently doing postgraduate work at Johns Hopkins University, where he studied morphology with W. K. Brooks, and physiology with H. Newell Martin.

As a child he had shown an immense interest in natural history and even at the age of ten, he collected birds, birds' eggs, and fossils during his life in the country; and in 1887, the year after his graduation, he spent some time at the seashore laboratory of Alpheus Hyatt at Annisquam, Mass. During the years 1888-1889, he was engaged in research for the United States Fish Commission at Woods Hole, a laboratory with which he was continuously associated from 1902 onwards, making expeditions to Jamaica and the Bahamas. In 1890 he obtained his Ph.D. degree at Johns Hopkins University. In that same year he was awarded the Adam Bruce Fellowship and visited Europe, working especially at the Marine Zoological Laboratory at Naples which he visited again in 1895 and 1900. At Naples he met Hans Driesch and Curt Herbst. The influence of Driesch with whom he later collaborated, no doubt turned his mind in the direction of experimental embryology.

In 1891 he became Associate Professor of Biology at Bryn Mawr College for Women, where he stayed until 1904, when he became Professor of Experimental Zoology at Columbia University, New York. He remained there until 1928, when he was appointed Professor of Biology and Director of the G. Kerckhoff Laboratories at the California Institute of Technology, at Pasadena. Here he remained until 1945. During his later years he had his private laboratory at Corona del Mar, California.

During Morgan's 24-years period at Columbia University his attention was drawn toward the bearing of cytology on the broader aspects of biological interpretation. His close contact with E. B. Wilson offered exceptional opportunities to come into more direct contact with the kind of work which was being actively carried out in the zoological department, at that time.

Morgan was a many-sided character who was, as a student, critical and independent. His early published work showed him to be critical of Mendelian conceptions of heredity, and in 1905 he challenged the assumption then current that the germ cells are pure and uncrossed and, like Bateson was sceptical of the view that species arise by natural selection. «Nature», he said, «makes new species outright.» In 1909 he began the work on the fruitfly *Drosophila melanogaster* with which his name will always be associated.

It appears that *Drosophila* was first bred in quantity by C. W. Woodworth, who was working from 1900-1901, at Harvard University, and Woodworth there suggested to W. E. Castle that *Drosophila* might be used for genetical work. Castle and his associates used it for their work on the effects of inbreeding, and through them F. E. Lutz became interested in it and the latter introduced it

to Morgan, who was looking for less expensive material that could be bred in the very limited space at his command. Shortly after he commenced work with this new material (1909), a number of striking mutants turned up. His subsequent studies on this phenomenon ultimately enabled him to determine the precise behaviour and exact localization of genes.

The importance of Morgan's earlier work with *Drosophila* was that it demonstrated that the associations known as coupling and repulsion, discovered by English workers in 1909 and 1910 using the Sweet Pea, are in reality the obverse and reverse of the same phenomenon, which was later called linkage. Morgan's first papers dealt with the demonstration of sex linkage of the gene for white eyes in the fly, the male fly being heterogametic. His work also showed that very large progenies of *Drosophila* could be bred. The flies were, in fact, bred by the million, and all the material thus obtained was carefully analysed. His work also demonstrated the important fact that spontaneous mutations frequently appeared in the cultures of the flies. On the basis of the analysis of the large body of facts thus obtained, Morgan put forward a theory of the linear arrangement of the genes in the chromosomes, expanding this theory in his book, *Mechanism of Mendelian Heredity* (1915).

In addition to this genetical work, however, Morgan made contributions of great importance to experimental embryology and to regeneration. So far as embryology is concerned, he refuted by a simple experiment the theory of Roux and Weismann that, when the embryo of the frog is in the two-cell stage, the blastomeres receive unequal contributions from the parent blastoderm, so that a «mosaic» results. Among his other embryological discoveries was the demonstration that gravity is not, as Roux's work had suggested, important in the early development of the egg.

Although so much of his time and effort was given to genetical work, Morgan never lost his interest in experimental embryology and he gave it, during his last years increasing attention. To the study of regeneration he made several important contributions, an outstanding one being his demonstration that parts of the organism which are not subject to injury, such as the abdominal appendages of the hermit crab, will nevertheless regenerate, so that regeneration is not an adaptation evolved to meet the risks of loss of parts of the body. On this part of his work he wrote his book *Regeneration*.

Apart from the books previously mentioned Morgan wrote: *Heredity and Sex* (1913), *The Physical Basis of Heredity* (1919), *Embryology and Genetics* (1924), *Evolution and Genetics* (1925), *The Theory of the Gene* (1926), *Experimental Embryology* (1927), *The Scientific Basis of Evolution* (2nd. ed., 1935), all of them classics in the literature of genetics.

Morgan was made a Foreign Member of the Royal Society of London in 1919, where he delivered the Croonian Lecture in 1922. In 1924, he was awarded the Darwin Medal, and in 1939 the Copley Medal of the Society.

For his discoveries concerning the role played by the chromosome in heredity, he was awarded the Nobel Prize in 1933. Among his collaborators at Columbia may be mentioned H. J. Muller <../1946/index.html>, who was awarded the Nobel Prize in 1946 for his production of mutations by means of X-rays.

Morgan married Lilian Vaughan Sampson, in 1904, who had been a student at Bryn Mawr College, and who often assisted him in his research. They had one son and three daughters. Professor Morgan died in 1945.

Thomas H. Morgan died on December 4, 1945.

2. <http://www.nndb.com/people/048/000127664/>

Thomas H. Morgan

AKA Thomas Hunt Morgan

Born: 25-Sep -1866 ☐ Birthplace: Lexington, KY ☐ Died: 4-Dec -1945 ☐ Location of death: Pasadena, CA ☐ Cause of death: Heart Failure

Gender: Male ☐ Race or Ethnicity: White ☐ Occupation: Scientist

Nationality: United States

☐ Executive summary: Fruit fly chromosomes and heredity

In his early career, zoologist and geneticist Thomas H Morgan argued against Charles Darwin's theory of natural selection, and published a paper arguing that specific hereditary traits could not be carried on a single chromosome. He changed his mind when he began studying inherited traits among the small fruit fly *Drosophila melanogaster*. Breeding the bugs by the millions in his "fly room" at Columbia University, he kept detailed files on their physical similarities, differences, and mutations. From these patterns, he theorized a linear arrangement of genes in the fruit flies' chromosomes, and surmised in his famous book *Mechanism of Mendelian Heredity* that chromosomes are responsible for identifiable, hereditary traits. His work helped clarify the mysteries of evolution, formed the modern understanding of heredity, and won Morgan the 1933 Nobel Prize in Physiology or Medicine.

He married Lilian Vaughan Sampson, a pioneering geneticist in her own right. She authored sixteen scientific papers and discovered the attached X and closed X chromosomes in fruit flies.

Morgan's maternal great-grandfather was **Francis Scott Key**, author of "The Star-Spangled Banner". On his father's side, his uncle, **John Hunt Morgan, was a Confederate General** in the Civil War, and the namesake of Morgan's Raid, where, in 1863, he led the South's farthest incursion into the North, into Kentucky, Indiana, and Ohio. His great-grandfather was Charlton Hunt, the first Mayor of Lexington, and his great-great-grandfather was John Wesley Hunt, one of that city's founders.

Father: Charlton Hunt Morgan (U.S. Consul to Italy, b. 23-Aug-1839, d. 10-Oct-1912)

Mother: Ellen Key Howard Morgan (b. 31-Jul-1840, m. 7-Dec-1865, d. 1925)

Sister: Eleanor Howard Morgan

Wife: Lilian Vaughan Sampson Morgan (geneticist, b. 1870, m. 4-Jun-1904, d. 1952)

Daughter: Edith Sampson Morgan Whitaker

University: BS, University of Kentucky (1886 ☐ University: PhD, Johns Hopkins University

(1890) ☐ Teacher: Biology, Bryn Mawr College (1891-1904) ☐ Professor: Experimental Zoology, Columbia University (1904-28) ☐ Professor: Biology, California Institute of Technology (1928-45)

☐ Administrator: California Institute of Technology (1928-45)

Nobel Prize for Medicine 1933

Author of books: ☐ The Physical Basis of Heredity (1919, research) ☐ Mechanism of Mendelian Heredity (1923, research) ☐ Evolution and Genetics (1925, research) ☐ The Theory of the Gene (1928, research) ☐ Embryology and Genetics (1934, research)

3. 1910 New York Census

Manhattan, New York City

Morgan, Thomas Hunt 43 b. KY Father born KY MOther born MD Professor university

" Lilian V. Wife 39 3 Children 3 living b. ME Parents born ME

" Howard Son 4 b. NY

" Edith S. Daughter 2 b. MA

" Lilian V. Daughter 3/12 b. NY

4. 1920 New York Census

Manhattan, New York City

Morgan, Thomas 53 b. KY Father born KY Mother born MD Professor university

" Lillian Wife 49 b. ME Parents born ME

" Howard Son 13 b. NY

" Edith Daughter 12 b. MA

" Lillian V. Daughter 4 b. NY

" Isabel Daughter 8 b. MA

5. 1930 California Census

Pasadena

Morgan, Thomas H. 63 b. KY Father born KY MOther born MD Professor college

" Lilian V. Wife 59 b. ME Parents born ME

" Lilian V. Daughter 20 b. NY

" Isabel M. Daughter 18 b. MA

6. U.S. Passport Application

7. National Academy of Sciences.

T h o m a s H u n t M o r g a n

1866?1945

A Biographical Memoir by A. H. Sturtevant

8. Updated Morgan Genealogy By Nathaniel Harris Morgan