

Edwin Grant Conklin

Edwin Grant Conklin was born in Waldo, Ohio, on 24 November 1863 to parents Nancy Maria Hull and Dr. Abram V. Conklin. Conklin's family was very religious and he seriously considered a theistic path before choosing a career in academics. Conklin's scientific work was primarily in the areas of embryology, cytology, and morphology, though many questions regarding the relationships between science, society, and philosophy had an influence on both his writings and academic lectures. Conklin's work regarding cell lineage helped to bring the study of evolution and embryology together into one discipline. Conklin was an exceptional researcher who published many books and papers on the subjects of cell lineage and embryology as well as an extremely diverse collection of publications on evolution and the philosophy of biology.

Educated in the public school system, Conklin went straight from high school in Waldo to the Ohio Wesleyan University in Delaware, Ohio, where he was encouraged by instructor Edwin T. Nelson to pursue his interest in natural history. Conklin received his BA from Ohio Wesleyan University in 1885 and his MA in 1889. From there Conklin went to Johns Hopkins University in Baltimore, Maryland, where, with fellow students Thomas Hunt Morgan, Shosaburo Watase, Henry V. Wilson, and Ross G. Harrison, he studied physiology with H. Newell Martin, morphology with William Keith Brooks, and geology and paleontology with William B. Clark. Conklin received his PhD from Johns Hopkins University in 1891, with his dissertation being on the cell lineage of the gastropod *Crepidula*. It was while working on his dissertation that Conklin traced the origin of the mesoderm to a single cell, now called the 4D cell, which arose between the germinal layers of the ectoderm and the endoderm. Conklin's research was intended to show homologous traits during early development of different organisms. The results of this research would provide morphological data that would be useful in understanding evolutionary relationships. Conklin's hypothesis was established at the Marine Biological Laboratory (MBL) at Woods Hole, MA, in the summer of 1891 when he compared his results to those of cell biologist Edmund Beecher Wilson's work with the annelid *Nereis*. Both researchers were surprised at the similar patterns of cleavage between the two organisms, as prior to that time the two organisms were believed to be only distantly related, if at all. In addition to his cell lineage studies, Conklin also used *Crepidula* to study mitosis. While most of his investigations were observational, he was a strong proponent of experimental biology, and felt that experimental work had been neglected in biology for too long. As valuable as observation was, it alone failed to answer many important questions.

From 1885 through 1888, Conklin was a teacher at Rust University in Mississippi, where in addition to providing instruction in most of the sciences, he was an instructor of Latin, Greek, and English. In 1889, while still a graduate student, Conklin married Belle Adkinson, with whom he remained until her death in 1940. For the years between 1891 and 1894, Conklin taught at Ohio Wesleyan University. After leaving Wesleyan, Conklin moved to Chicago, where he was a teacher at Northwestern University from 1894 to 1896. In 1896 Conklin moved to the University of Pennsylvania, where he remained for twelve years until he became professor of biology and chairman of the department at Princeton University in 1908. Conklin remained at Princeton until his retirement in 1933. During his twenty-five years as professor and director, and for several years past retirement, Conklin organized many seminars on the topics of philosophy of biology, giving lectures on topics such as "Science and the Future of Man" in 1930, "Science and Ethics" in 1937, and "The Biological Basis of Democracy" in 1938. Conklin also wrote about nature versus nurture in the study of human development, and his 1915 book *Heredity and Environment in the Development of Men* was dedicated to exploring the roles of heredity and environment in shaping human physical, mental, and moral characteristics. A strong proponent of Charles Darwin's theories, Conklin

devoted a great deal of time to lecturing and writing, for the scientific community as well as the public, on the various aspects of evolutionary theory. Conklin began his work with the primitive chordate *Halocynthia* to show the evolutionary relationship between invertebrates through shared characteristics during early development of the embryo. Through this work, Conklin was able to prove that specific parts of the egg cell always give rise to specific parts of the embryo, which was the basis of the mosaic theory of embryo development. Conklin's results brought him into conflict with proponents of the theory that specific parts of an egg cell can give rise to almost any part of the embryo—the regulative theory of development—such as Hans Driesch.

In addition to his teaching and publishing Conklin was involved with a number of prominent societies and institutions, as well as serving on the editorial boards of several journals, including the *Biological Bulletin* published by the MBL, the *Journal of Morphology*, and the *Journal of Experimental Zoology*, which Conklin founded in 1904 with Thomas Hunt Morgan and Ross Granville Harrison. Conklin was elected President of the American Society of Zoologists in 1899, served on the board of trustees of the MBL from 1897 until 1933, served as President of the American Society of Naturalists in 1912, and as President of the American Association for the Advancement of Science in 1936. He was a member of the American Philosophical Society and served as president on two separate occasions, first from 1942 until 1945, and again from 1948 until 1952. Conklin was also a member of the Academy of Natural Sciences of Philadelphia, the Wistar Institute, the American Academy of Arts and Sciences, and the National Academy of Sciences. Conklin was a member of several overseas societies as well. These institutions were: the *Königliche Böhmische Gesellschaft der Wissenschaften*; the Royal Society of Edinburgh; the Zoological Society of London; the *Académie Royale de Belgique*; the *Istituto Lombardo* in Milan; and the *Accademia Nazionale dei Lincei* in Rome, which literally translates to The National Academy of Lynxes, named as such because of the keen eyesight of the lynx.

Outside of his scientific and professional work, Conklin had a long standing interest in the philosophy of biology and the relations between science and human values. Many of his lectures, papers, and books dealt with the often hazy but important ground between pure science and the application of science to social problems. A strong supporter of the Eugenics movement, Conklin was a member of numerous societies dedicated to the ideology of purifying the Human race of unwanted and unfavorable elements. Conklin was a charter member of the Galton Society, which was formed in 1918 by Madison Grant, as well as being director of the American Eugenics Society from 1923 until 1930.

Conklin's contributions to embryology came in many forms. His discovery of the origin of the mesoderm was the basis for the mosaic theory of development. A strong supporter of Darwin, Conklin helped bring the study of embryology and evolution into one discipline. Being a tireless researcher and prolific author, Conklin left a wealth of information that was invaluable to future generations of researchers. With an interest in the philosophy of biology, Conklin authored a large amount of material that explored the concept of science and society, including many on nature versus nurture. Beyond his role as teacher and mentor, Conklin served on the editorial boards of several journals as well as having served as president of many prestigious scientific societies. Edwin Grant Conklin died in Princeton, New Jersey, on 21 November 1952.

Sources

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