

# Min Chueh Chang

As one of the researchers involved in the development of the oral contraceptive pill, Min Chueh Chang helped to revolutionize the birth control movement. Although best known for his involvement with “the pill,” Chang also made a number of discoveries throughout his scientific career involving a range of topics within the field of reproductive biology. He published nearly 350 articles in scientific journals. His dedication to his work left him with little time for family responsibilities, although shortly after his arrival in the United States in 1951, Chang married Isabelle Chin, an American-born Chinese woman with whom he would later have three children.

Chang was born on 10 October 1908 in Tai Yuan, China. As the son of a magistrate, he was able to attend university, and he received his bachelor’s degree in animal physiology from Tsing Hua University in Peking in 1933. After graduating Chang remained at the university to teach and study nerve cells. In 1938 he received a fellowship to study agricultural science at Edinburgh University. Because of his new found interest in reproductive biology, Chang gladly accepted an invitation from Arthur Walton in 1939 to study ram spermatozoa at Cambridge University, where he remained until 1945. At Cambridge he studied the metabolism, motility, and fertilizing capacity of ram sperm, which had a number of applications in the artificial insemination of farm animals. In the World War II era this research was especially important as it had the potential to increase food production.

In 1951 Chang joined Gregory Goodwin Pincus and Hudson Hoagland at Clark University and soon the Worcester Foundation for Experimental Biology after Pincus received a grant that Margaret Sanger had secured. The funding came from the Planned Parenthood Federation of America to carry out research to develop the contraceptive potential of synthetic progesterone. Because of his previous experience with animal fertilization research, Chang was a valuable resource for the team.

In 1959 Chang was able to demonstrate that eggs from a female black rabbit could be fertilized in vitro by the sperm of a male black rabbit. The fertilized eggs were then transferred to a white female and resulted in the birth of black offspring. This series of steps revealed the potential of in vitro fertilization and the influence (or apparent lack thereof) of a surrogate female. In 1961 he was awarded a PhD in animal breeding from Cambridge University based on his research on the effects of testicular cooling and various hormonal treatments on the physiological processes of sperm in rabbits and some farm animals. Chang also sought to understand the effects of various environmental factors that rabbit sperm are exposed to during fertilization from the beginning of the sperm’s journey starting in the epididymis to its eventual endpoint in the female reproductive tract. In addition to rabbits, Chang also conducted a number of studies on the in vitro fertilization of golden hamster, mouse and rat ova. These studies helped form the basis of the in vitro fertilization of human ova by Patrick Steptoe and Robert Edwards, which later led to the birth of the first “test-tube baby,” Louise Joy Brown, on 25 July 1978.

Throughout his career Chang made a number of important scientific discoveries that influenced a number of technologies including the oral contraceptive pill and in vitro fertilization. Chang received numerous awards for his contributions including: the Albert Lasker Basic Medical Research Award in 1954, the Ortho Medal and Award by the American Fertility Society in 1961, the Hartman Award by the Society for the Study of Fertility in 1971, the Wippman Scientific Research Award by Planned Parenthood in 1987, and he was elected to the National Academy of Sciences in 1990. After years of dedication to his work, Chang died on 5 June 1991 in Worcester, Massachusetts.

## Sources

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