



Name in English: Min Chueh Chang
Name in Chinese: 张明觉 [張明覺]
Name in Pinyin: Zhāng Míngjué
Gender: Male
Birth Year: 1908-1991
Birth Place: Dunhòu, China

Scientist, Co-inventor of *in vitro* fertilization and birth control pill

Profession: Reproductive biologist

Education: Bachelor's degree, Animal Psychology, 1933, Tsinghua University; Ph.D., Animal Breeding, 1961, Cambridge University

Awards: 1954, Albert Lasker Award, Lasker Foundation; 1961, Ortho Medal, American Fertility Society; 1970, Carl G. Hartman Award, Society for the Study of Reproduction; 1975, Francis Amory Prize, American Academy of Arts and Sciences; 1987, Wippman Scientific Research Award, Planned Parenthood Federation of America; 1990, Elected membership to the National Academy of Sciences (one of the highest honors for American scientists)

Contributions: In a career that spanned 45 years, Min Chueh Chang is most known for his *in vitro* fertilization work and for his co-invention of the first birth control pill. Chang's area of expertise was in reproduction among mammals, focusing his interests in sperm, eggs, and the fertilization process. Over the course of his career, he conducted numerous major research projects that contributed to the greater understanding of reproduction. Chang's influence on the scientific community is monumental – his experimental work in mammalian fertilization has been written about in nearly 350 publications.

In the 1950s, together with Gregory Pincus, Chang co-developed the first birth control pill, an invention that had momentous cultural impact in the sexual revolution of the 1960s and in the creation of modern society. Another major discovery Chang made was the process of capacitation, the change the sperm must go through in the female genital tract to enable it to penetrate and fertilize an egg. Among his other major findings, Chang discovered that significantly lowering temperatures or raising them higher destroyed fertilizing capacity.

Chang's *in vitro* fertilization work, reproduction outside of a living organism, is considered by many to be his greatest accomplishment. In 1935, Pincus claimed to have successfully produced rabbits from *in vitro* fertilization of rabbit eggs, but no one was able to repeat his success and therefore verify Pincus' claim. Finally, in 1959, Chang authenticated Pincus' claim when he *in vitro* fertilized a black rabbit's eggs with a black rabbit's sperm, transferred them to a white rabbit, and the white rabbit produced young

black rabbits. Later on, Chang continued his *in vitro* fertilization research, refining the process, and repeating the process on other mammals like rodents. In 1978, scientists successfully created the first “test tube baby” through *in vitro* fertilization of human eggs, a feat impossible without the research and experimental work of Chang. This technological advance has given hope to countless people around the world who would otherwise have remained childless.

Publications/Patents: Of the 347 papers in Chang’s bibliography, he was the sole author of 112 papers and senior author of 38

External Links:

<http://www.nap.edu/readingroom.php?book=biomems&page=mchang.html>

http://en.wikipedia.org/wiki/Min_Chueh_Chang

<http://books.nap.edu/html/biomems/mchang.pdf>