Dr Min-Chueh Chang

Dr M. C. Chang, universally known just as ‘Chang’, died at Shrewsbury, Massachusetts, USA, on 5 June 1991, and we lost one of this century’s most innovative, productive and colourful scientists within the field of reproductive biology. His ashes are interred in the cemetery at Shrewsbury, which is adjacent to the campus of the Worcester Foundation of Experimental Biology, where he worked since moving from Cambridge, UK, in 1945. He had completed his Ph.D. and four years of postdoctoral work at Cambridge with Sir John Hammond’s group. British institutions, and particularly the Society for the Study of Fertility and the Journal of Reproduction & Fertility have lost one of their staunchest supporters.

On 12 October 1991, the Worcester Foundation for Experimental Biology held a memorial programme, which I attended, having received financial support from JRF Ltd at the University of Nottingham. Chang had maintained an office and a considerable influence on the Foundation’s work after his formal retirement. During the ceremony, a ginkgo tree was planted in the Foundation grounds as a memorial and an indication of his interests in rural life. About 200 colleagues and friends from all parts of the World were present. The main speakers at the ceremony were: Professor Roy O. Greep; his research colleagues Dr Mahlon Hoagland, Dr Eliahu Caspi and Dr Oscar Hechter; Dr Michael Bedford (one of his many students) and myself. All paid tribute to his brilliant theoretical work and the universal influence of the team formed jointly at Worcester with Dr Gregory Pincus, which resulted in the development and application of methods of oral contraception. Who can estimate how many millions have benefited from this work? In addition, it was emphasized that Chang had participated actively in research leading to two further important discoveries: the process of sperm capacitation and early studies on *in vitro* fertilization and embryo transfer. Chang’s association with Dr Cyril Adams on embryo transfer in rabbits created an environment where successful embryo transfer in farm animals, subsequently pioneered in Cambridge, UK, became feasible.

To be associated with three major developments in one field is indeed exceptional and is a mark of Chang’s calibre. However, characteristically, he always underestimated the influence of his work and, in describing his early studies, he wrote ‘Throughout the following years I did a few experiments for selfish reasons to keep myself occupied and amused. I never thought my work was of importance.’

Chang was a staunch Anglophile and regularly attended annual meetings of the Society for the Study of Fertility, where he particularly sought out the young scientists to discuss their results and encourage their further efforts. Chang received many distinctions during his life, including election to the National Academy of Sciences of the United States of America. After the award of the Society’s Marshall Medal at the Annual Meeting in Nottingham in 1971, Chang sent a copy of his acceptance speech to Professor Roger Short, the then Chairman of the Society, who had presented Chang for the award. Chang’s document was not published in the Journal at that time, but is printed with this appreciation. It truly embodies the essential character and personality of Chang, gives details of his early training, his fears and aspirations and reveals, in true measure, the depth of his intellectual calibre. His life embodied selfless devotion to science. His predictions in 1971, concerning his recommendations of the importance of future research, are indeed enlightening.

The Worcester Foundation has, using contributions made in Chang’s name, established a Memorial Lecture at the Foundation. The first was given in November 1991 by Dr Paul Wassarman, concerning developmental biology and fertilization. Nottingham University had a long association with Chang and he was awarded a Degree of Doctor of Science Honoris Causa by the University in 1982. After this he established a capital fund at Nottingham, the interest from which is used under the ‘Chang Fund’ to support international visits by postgraduate students.

All speakers at the Worcester Meeting paid tribute to the dedicated support given to Chang by his wife, Isabelle, his son, Francis Hugh (universally known as Poncho), and his daughters, Claudia and Pamela.

Eric Lamming
Speech in accepting the Marshall Medal at the Annual Meeting of the Society for the Study of Fertility, 16 July 1971, at the University of Nottingham

M. C. Chang

Worcester Foundation for Experimental Biology
Shrewsbury, Massachusetts, USA

I was born in a small village in the interior of China, Shansi, in the early part of the century. My grandfather used to tell me that the foreign devils did not have knees, so that was why Earl Macartney, in 1793, did not kowtow to the great Chinese Emperor, Chien-Lung. This is probably a very good excuse to cover up the British snobbery and the Chinese superiority complex in order to save face for both nations, but a large number of Chinese at that time did believe that white men had no knees. My father passed his first Imperial examination of the county and went to Shansi University, established with the help of some British missionaries, who translated many English textbooks into Chinese. His studies, however, were interrupted by the 1911 Revolution. I went to Tsing Hua University, Peking, established from the Boxer Rebellion indemnity fund returned by the US Government, and in 1938 I won a scholarship to study in Great Britain. Again, this was supported by the Boxer Rebellion indemnity fund returned to China by Great Britain. So, I have to be grateful to the poor ignorant Chinese farmers who killed a few foreigners, the results of which provided the opportunity for me to be properly educated. The Chinese government planned to send me to the Queen’s University, Belfast, Northern Ireland, because Sir Robert Hart, who was the Inspector General for the Chinese Maritime Customs, was a native of Belfast or graduated from the Queen’s University. The Chinese government would have liked to make what seemed to be this appropriate gesture to the natives of Belfast. For some reason, Queen’s University did not accept me and instead I went to the University of Edinburgh, Scotland. There, Professor F. A. E. Crew of the Genetics Institute said to me that I should ‘follow the tails of cows’, so I did a diploma course at the University of Edinburgh, instead of killing rats for a Ph.D. degree. I then had the good fortune to be accepted as a research student by Dr John Hammond and Dr Arthur Walton at the University of Cambridge, probably because I found a cow egg in their laboratory and had a paper published in the USA. Later, in 1945, I left Cambridge for America, where I planned to stay for one year at the Worcester Foundation for Experimental Biology, Shrewsbury, newly established by Drs Hudson Hoagland and Gregory Pincus. One thing led to another, and I have stayed in the USA until now, 26 long years. I feel that I have the right to claim my position as a founding member of the Society for the Study of Fertility, because Arthur Walton took me to Dr Claire Harvey’s house, in Exeter, in 1944, when the first meeting of this Society was held.

I am very fond of English culture and the English themselves, not only because I have so many lady friends, old and young, in England, but also because of their strong sense of justice, honour and fair play. They treated me kindly and never considered me as a ‘Chinaman’, and my wife has often called me a black Englishman. In turn, I have also treated the English with special consideration and have had many British associates working with me in my laboratory. In my school days when the Chinese nation was so much humiliated by foreign powers, I thought that it would be very hard for me to stand up to an Englishman on equal terms. Now you have honoured me with such high esteem. I relate this not to show off my pedigree, my tolerance, generosity and my old age, but to express the fast change in human concepts, which have moved away from chauvinism and nationalism to internationalism and humanism during the past 50 years, and I have experienced all
of it. Then you will realize how much I personally appreciate the kind consideration you have extended to me in awarding me the Marshall Medal.

As for my accomplishment, without false modesty I can say that all my work has only touched the surface of reproductive biology and I am really not in a position to be compared with some of the previous recipients of the Marshall Medal, such as Professors Hartman, Evans, Brambell and Parkes, who contributed so much, not only in reproductive biology, but in biology as a whole. I thank my luck that I had the good fortune to study under the late John Hammond and the late Arthur Walton who inspired me so much personally and intellectually, and later on to associate with the late Dr Gregory Pincus who put up with me for 22 years. Incidentally, Marshall examined my Ph.D. thesis and he was kind enough not to ask me hard questions. Moreover, I was fortunate to begin my work at a time when reproductive biology was not yet in fashion, and not subject to the pressures of this present era. For instance, I had played around with egg yolk for the storage of semen when I first got to the Animal Research Station, Cambridge, in 1939, but, because of my ignorance of buffer systems, I did not get anything out of it, and Phillips and Lardy of the USA reported the use of egg yolk buffer for the storage of bull semen at that time. I also played around with liquid air after I finished my Ph.D. degree in 1941. I can still remember the stares that the people in the street gave me when I carried liquid air in a thermos flask in my basket cycling from the Cavendish Laboratory to the Animal Research Station. But I did not have the patience, insight, or the good fortune of my friends, Chris Polge and Audrey Smith. I had also worked on stilboestrol with my good friend, John Hammond Jr, but never thought much about the effect of female hormones or hormone-like substances on reproductive processes until 20 years later.

I studied fertilization in vitro and parthenogenesis at the Worcester Foundation mainly for the sake of pulling the Director’s leg. I did the transfer of rabbit eggs to show off, and to demonstrate that I could do with rabbits what the other Americans could not do with cow eggs. My study of the effect of progestins was in an attempt to inhibit fertilization, not entirely for the development of a contraceptive pill.

The members of the Society are doing very important and good work at present, as shown from the reports published in the Journal of Reproduction & Fertility. To mention a few items, I do hope that in the near future we will have better understanding of: (1) the effect, if there is any, of seminal plasma on the fertilizing capacity of spermatozoa; (2) the development and the decline of the fertile life of spermatozoa and eggs; (3) the physiological and biochemical mechanism of capacitation, acrosome reaction, decapacitation and recaptation of spermatozoa; (4) the process and mechanism of sperm penetration through the investments of the eggs, and activation of unfertilized eggs, and the development of fertilized eggs; and (5) the mechanism and the chemical components that block polyspermy and interspecific fertilization. On the practical side, I do hope that some lucky ones will be able to find a way to control sex, to discover a contraceptive pill for the male, and to do some genetic engineering to produce more intelligent, tolerant and open-minded males, and beautiful, clever and friendly females.

At this happy moment of my life, with the permission and indulgence of our Chairman, I should like to present small gifts, as a token of appreciation, to my teacher’s wife, Mrs Elsie Walton, and to our Chairman, Dr Roger Short.