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OBITUARY

Ruth Fowler (1930–2013)



Ruth Fowler was born in December 1930, the youngest of four siblings. She was a remarkable woman who had that rare capacity to juggle three, indeed four, of the most difficult and all too often competing roles in our complex lives: successful mother, wife and scientist whose highly significant work spanned more than three decades. And for

that “*élite fourth*” role, provided sustenance at both the intellectual and family level to a great, Nobel Laureate husband!

Ruth Fowler was the granddaughter of celebrated physicist Lord Ernest Rutherford FRS (1871–1937) – himself a 1908 Nobel laureate, having been awarded the prize for Chemistry “for his investigations into the disintegration of elements, and the chemistry of radioactive substances” – and daughter of physicist Sir Ralph Fowler FRS (1889–1944) and mother Eileen, who tragically died a short time after Ruth’s birth. Eileen was the only daughter of Lord Rutherford, with whom Ralph Fowler worked in Cambridge in 1919 after World War I. Eileen’s premature death prompted Ralph Fowler and his children to move to Cromwell House in Trumpington, Cambridge where Ruth was raised. Ralph Fowler was the Plummer Professor of Mathematical Physics in Cambridge from 1932 to 1944. He has been described as an exceptionally talented mathematical physicist, a fine sportsman and “an inspirational teacher and leader of men”. Ruth’s father’s work took him from an arduous role in high security war work at the Ordnance Board to the Admiralty during World War II. Sadly his health deteriorated at a relatively young age and he died at 55 when Ruth was only 13. Despite an early loss of both parents, she was obviously a determined young woman who was interested in the biological sciences. In the early 1950’s the young and intelligent Ruth won a place to study genetics at Edinburgh University. It was while she was studying for her degree she met Bob Edwards, in a statistics class, who was to become her husband and life-long scientific colleague. They married in 1956 and had five daughters

between 1958 and 1964: Caroline, Sarah, Jenny and twins Anna and Meg.

During the early years working together Ruth and Bob devised ways of increasing the numbers of synchronized eggs recoverable from adult female mice using controlled ovulation induction. This work, which resulted in a series of scientific papers, the first published in 1957 (Fowler and Edwards, 1957) overturned the conventional wisdom that superovulation of adults was not possible. It was seminal work that had implications for driving forward advances in animal fertilization *in vitro* and preimplantation embryology. During a notable scientific career Ruth went on to publish many papers – all the more remarkable when contemplating the responsibility of 5 young children and a husband who was almost single-handedly pursuing a scientific dream that took him away for long periods of time. Her husband was not only developing a new science but also battling against prevailing prejudices within the Establishment and society at large.

During the 1960s Ruth’s scientific work resulted in publications detailing the effect of progesterone and oestrogen on pregnancy and embryonic mortality in adult mice, and the differences of eggs released by the two ovaries whilst comparing natural and “superovulation” treatment. During the 1970s, and perhaps as a reflection of her husband’s scientific passion, Ruth’s scientific contributions shifted slightly, publishing papers on the growth of human embryos in the laboratory, the genetics of early human development and, in collaboration with Martin Johnson and others, on the progesterone and protein composition of the uterine fluids of the rabbit – important work to understanding the milieu of the preimplantation embryo. During this period Ruth was also interested in follicular growth and follicular steroidogenesis, and published a series of papers studying mouse, rat and human ovaries. During 1978, the year of the birth of the first successful IVF conception, Ruth was particularly active publishing influential work, in collaboration with Edwards and Steptoe, on steroidogenesis in human granulosa cells.

It was during these years, 1976–1985, that I shared an office and laboratory with Ruth and got to know something of

the remarkable person as well as guiding scientist. I found Ruth, with all her own commitments, generous with her time, enormously instructive with her scientific guidance and attention to detail; but perhaps what stayed with me, and always will, was her profound yet gently understated advice on how carefully to juggle the conflicting influences of a burgeoning career. It was, perhaps, the measure of Ruth's enormous talents that she, who had lost her parents at such a young age, was to be able to master such encounters that life has to offer.

Ruth continued her scientific work into the 1980's whilst her family of daughters were growing and requiring her continued involvement and guidance. Ruth published important papers on interaction between the protein-carbohydrate composition of the cumulus-oocyte complex – an area of science that modern day clinical embryologists and reproductive physiologists will appreciate as being critical in the reproductive process. Since 2000, Ruth has been a constant supporter of this journal, housed as it is in the farm where she and Bob lived for so long, Always interested in its progress, she was a regular attendee at the Christmas lunch – she will be missed this year.

It is with terrible sadness that I have to pen words relating to the passing of this remarkable woman who, in her own way, was as much a mentor to me as was her husband, Bob Edwards. Her incredible fortitude in dealing with her lengthy illness is a reflection of how outstanding she was

in all aspects of the life she led and the influence she exerted and example she offered. In December 2010, at the Nobel awards ceremony that was full of pathos in Bob's absence, these precious words were spoken, 'In the absence of this year's Nobel Laureate in Physiology or Medicine, I ask Professor Edwards' wife and long-term scientific companion, Dr Ruth Fowler Edwards, to come forward and receive his Prize from the hands of His Majesty the King'. Save the few who knew Ruth, most would not understand how great a person and influence on Bob she was, and so how appropriate it was that Ruth should collect this award on behalf of her husband. Ruth Fowler, extraordinary mother, wife and scientist will be very greatly missed by all who knew her, and by those who have benefited from her fine scientific contribution.

Reference

Fowler, R.E., Edwards, R.G., 1957. Induction of superovulation and pregnancy in mature mice by gonadotrophins. *J. Endocrinol.* 15, 374–384.

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