



## *How IVF became a Reality*

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*Quoted from "On the Shoulders of Giants Eponyms and Names in Obstetrics and Gynaecology"<sup>1</sup>*



**Patrick Christopher Steptoe**

Among the letters to the editor of the *Lancet* on 12 August, 1978 was a report of the world's first infant conceived outside the mother's body. The birth of Louise Joy Brown by caesarean section, just before midnight on 25 July, 1978, represented the culmination of ten years' collaborative research between Patrick Steptoe and Robert Edwards. As Steptoe later recalled when he first handed Mrs Lesley Brown her baby: 'She cradled the infant, then managed to whisper: "Thank you for my baby. Thank you."

Louise Joy had arrived, a whole new person to make this family complete at last. I doubt if I shall ever share such a moment in my life again.' The world of human reproductive medicine and infertility would never be the same.

Patrick Christopher Steptoe was born in Whitney Oxfordshire where his father was the registrar of births, deaths and marriages. He was delivered by a Dr Patey, and Steptoe's mother, wishing to name her son after the doctor, chose Patrick as the closest acceptable variant. Patrick Steptoe was a talented

musician, and by his early teens balanced two extremes of musical expression in playing the accompanying piano music for silent films in his local cinema, with recitals at St Mary's church.

Indeed, at the age of 18 he was appointed musical director and organist to the Christchurch Musical Society in Oxford. Thus, he did not begin his medical studies at King's college and St George's Hospital, London until he was 20, qualifying in 1939.

As a member of the Royal Naval Volunteer Reserve he served as surgeon lieutenant-commander from 1939 to 1946. In 1941, his ship was sunk in the Mediterranean, and after some time in the water he was picked up by the Italians and held as a prisoner of war for two years.

Steptoe took his training in obstetrics and gynaecology in the London hospitals. Consultant posts in London were rare and he took up his position in Oldham in 1951 and established a first-class clinical and postgraduate training unit. He was also a wine expert and achieved the status of Commandant du Tastevin de Bourgogne.

After retired from the National Health Service he spent the last eight years of his life training others at Bourn Hall and saw 1000 successful IVF babies conceived in that programme. He died in Canterbury on 21 March, 1988 from prostate cancer. At this funeral, this was held in Bourn Hall Chapel, one of his own musical compositions, requirement for a Dying Embryo', was played. He was buried in the churchyards of Bourn Hall.



Robert Geoffrey Edwards

Professor Robert Geoffrey Edwards was born on September 27, 1925 and grew up in Batley, Yorkshire, and in Manchester. Initially, he decided to study agriculture at the University College of North Wales (UCNW) in Bangor, but he soon realized that he was interested not so much in plants but rather in animal reproduction. Thus, he transferred to the Department of Zoology and received his B.Sc. in 1951 from UCNW; in 1962 the same institution offered him the degree of DSc.

After working for 1 year at the California Institute of Technology, in Pasadena, with a grant from the Population Council, on the immunology of reproduction, he returned to the UK and got a 5-year position at the National Institute for Medical Research in Mill Hill, London. There, he continued his research on oocyte maturation in a variety of animal species.

When his contract with the National Institute expired, Professor Edwards was appointed to the Physiological Laboratory in Cambridge. There, he continued his basic research but did not have access to human oocytes. Thus, he went for 6 weeks to the John Hopkins Hospital in Baltimore, Md., USA, where he collaborated with Howard and Georgeanna Jones in trying to mature and fertilize human oocytes in vitro, but with limited success.

The most important moment in the evolution of human in vitro fertilization was when he attended a lecture at the Royal Society of Medicine in London given by Patrick Steptoe, a gynecologist, describing laparoscopy, a surgical technique that could give access to the ovaries, enabling the retrieval of eggs in order to be fertilized in vitro. Their collaboration started in 1968, but since Patrick Steptoe was working in the Oldham General Hospital, Professor Edwards had to travel 4 hours from Cambridge to Oldham whenever there were oocytes available. These difficulties did not deter them, and in 1969 they achieved normal fertilization and cleavage of human oocytes in vitro, using freshly ejaculated spermatozoa. The “real” success, however, came almost 10 years later, in 1978, when Professor Edwards and Patrick were able to report the first viable intrauterine pregnancy after IVF, which resulted in the birth of Louise Brown.

**Steptoe’s and Edwards’ report of the first successful case in-vitro fertilization.<sup>2</sup>**

**Letters to the Editor**

**BIRTH AFTER THE REIMPLANTATION OF A HUMAN EMBRYO**

SIR,—We wish to report that one of our patient, a 30-years-old nulliparous married woman, was safely delivered by caesarean section on July 25, 1978, of a normal healthy infant girl weighting 2700 g. The patient had been referred to one of us (P.C.S.) in 1976 with a history of 9 years’ infertility, tubal occlusions, and unsuccessful salpingostomies done in 1970 with excision of the ampullae of both oviducts followed by persistent tubal blockages. Laparoscopy in February, 1977, was done with excision of the remains of both tubes, adhesolysis, and suspension of the ovaries in good position for oocyte recovery.

Pregnancy was established after laparoscopic recovery of an oocyte on Nov. 10, 1977, in-Vitro fertilization and normal cleavage in culture media, and the reimplantation of the 8-cell embryo into the uterus 2 1/2 days later. Amniocentesis at 16 weeks’ pregnancy revealed normal  $\alpha$ -fetoprotein levels, with no chromosome abnormalities in a 46 XX fetus. On the day of delivery the mother was 38 weeks and 5 days by dates from her last menstrual period, and she had pre-eclamptic toxæmia. Blood-pressure was fluctuating around 140/95, œdema involved both legs up to knee level together with the abdomen, back, hands, and face; the blood-uric-acid was 390  $\mu$ mol/l. and albumin 0.5 g/l of urine. Ultrasonic scanning and radiographic appearances showed that the fetus had grown slowly for several weeks from week 30. Blood-œstriols and human placental lactogen levels also dropped below the normal levels during this period. However, the fetus grew considerably during the last 10 days before delivery while placental function improved greatly. On the day of delivery the biparietal diameter had reached 9.6 cm, and 5 ml of amniotic fluid was removed safely under sonic control. The lecithin: sphingomyelin ratio was 3.9:1, indicative of maturity and a low risk of the respiratory-distress syndrome.

We hope to publish further medical and scientific details in your columns at a later date.

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**References**

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2. Steptoe PC, Edwards RG. Birth after the reimplantation of a human embryo. *Lancet* 1978; 2: 366.