

History of the Monash IVF Research Program from 1971 to 1989

In 1971, a group of researchers founded the Monash IVF Research Program with the mission to discover how in vitro fertilization, or IVF, techniques could become a treatment for infertility in both men and women. The program included researcher Carl Wood and colleagues John Leeton, Alex Lopata, Alan Trounson, and Ian Johnston at the Queen Victoria Medical Center and Royal Women's Hospital in Melbourne, Australia. Since the program's establishment in 1971, the Monash IVF Research Program has helped to develop and implement many IVF technologies still used in clinical practice as of 2020. Additionally, the program established some of the first successful IVF pregnancies and births. As of 2020, the Monash IVF Research Program is one of Australia's leading fertility programs and has used their technologies to help provide IVF treatment to thousands of infertile men and women.

IVF is a medical procedure during which healthcare professionals fertilize an egg cell with sperm outside of a woman's body, often in a glass dish in a clinical setting. An IVF procedure begins when physicians gather a woman's egg cells and a man's sperm sample. Harvesting egg cells from women involves inducing the natural mechanisms that lead to ovulation, or the release of a mature egg cell, typically enhanced with medications. After collection, the healthcare professionals then inseminate the egg cell or cells with sperm, later implanting the fertilized egg into the woman's uterus often while the patient is sedated. The goal of IVF is for one of those fertilized eggs to implant into the patient's uterus where it can grow and develop into an embryo. The embryo's cells begin dividing and eventually form into a fetus, just like they would with a natural fertilization through sexual intercourse. The purpose of an IVF procedure is to help infertile men and women have children by fertilizing the egg cells outside of the woman's body, enabling scientists and physicians to bypass many of the difficulties associated with infertility. Infertility is the inability to have children through sexual intercourse. Among many other causes, low sperm count in men and lack of ovulation in women can cause infertility.

Commencing in 1971, Wood led the Monash IVF Research Program through an original collaboration called the Melbourne Egg Project. Initially, the program included Wood, Leeton, and Lopata from Monash University in Melbourne, Australia, as well as Johnston from the University of Melbourne, also in Melbourne, Australia. At the time, Wood was the Chairman and Foundation Professor of the Department of Obstetrics and Gynecology at Monash University's Queen Victoria Medical Center in Melbourne, Australia. Additionally, Leeton worked as the director of the Infertility Clinic at Queen Victoria Medical Center. Lopata worked as the team's embryologist, and Johnston was a physician working at the Royal Women's Hospital in Melbourne, Australia. The founding members had different roles, with some working on the most efficient ways to induce ovulation and others working on how best to collect egg cells from the woman's body.

In 1971, the program began the preliminary research that led to the foundation of many IVF techniques. They began by recruiting women to donate their eggs for their research. Before the end of 1971, physicians Wood, Leeton, and Lopata were already collecting egg cells from women volunteers at the Queen Victoria Medical Center in Melbourne, Australia. Initially, the program's progress was slow, averaging only two patients a week. In 1972, Lopata attempted to speed up the program's progress by suggesting to Wood that the program recruit physician Johnston to incorporate additional resources from the Royal Women's Hospital in Melbourne, Australia. After Johnston joined the team, the Monash IVF research program extended to include the Royal Women's Hospital in Melbourne, Australia, which was where the team transformed a janitor's storeroom into a second

IVF laboratory. That laboratory was where the team stored the egg cells that they had collected from women volunteers.

In 1973, the researchers accomplished one of the world's first IVF pregnancies, although a few weeks later, the pregnancy ended in an early miscarriage. That pregnancy in 1973 provided one of the first indications that IVF techniques had the potential to be successful and resolve infertility. In 1977, the program obtained a 750,000 US dollar grant from the Ford Foundation, headquartered in New York City, New York, to support the project. As of 2020, that grant would be valued at over 3 million US dollars. However, according to professor Gabor Kovacs, the Ford Foundation did not want to be publicly recognized if an IVF birth occurred because there had been controversy surrounding IVF at the time. The grant enabled the program to recruit physician Trounson in 1978, at which point Wood told Trounson that if they could not produce a successful pregnancy from IVF within two years, then they would all move on to different projects. That same year, Wood assigned Trounson to a research team separate from Lopata's team, with the plan that competition between the two teams would progress the program's work.

The Ford Foundation's grant helped support the program's many contributions to the field of women's reproductive health. In 1978, researchers Patrick Steptoe and Robert Edwards conducted an IVF experiment based on the preliminary research of Wood. That experiment resulted in the birth of Louise Brown, who is one of the first people to be born through the use of IVF treatment. In 1980, the team began an IVF experiment that included volunteers John and Linda Reed. During the experiment, the researchers inseminated one of Linda's egg cells with a sperm cell from John in a laboratory and grew the fertilized egg cell in a dish. They shortly thereafter put the fertilized egg cell into Linda's uterus, where it implanted and eventually developed into a fetus. That experiment thereby led to one of Australia's first test-tube infants, named Candice Reed. Three years later in 1983, the team conducted another IVF experiment similar to that performed on the Reeds, but with a donated egg cell instead of an egg cell obtained from the same individual who would carry the pregnancy. Although the pregnancy ended in an early miscarriage ten weeks later, the experiment provided a basis of the methods to use for future IVF experiments with donated egg cells.

That same year in 1983, the program accomplished one of the world's first IVF births from a frozen embryo. Embryo freezing involves freezing a fertilized egg cell to thaw and implant later. That experiment provided evidence that an embryo which was frozen for a period of time in a laboratory setting was capable of implanting into a uterus and developing into a fetus. The Monash IVF research program also facilitated one of the world's first pregnancies using surgically removed sperm in 1985, and in 1989, successfully made possible one of the first IVF pregnancies delivered by a surrogate.

As the Monash IVF research program's scientists continued to study potential IVF methods, controversy arose among the general public, religious institutes, and certain social organizations regarding the ethics of IVF. Some argued that physicians who used IVF for their patients were only seeking financial gain rather than an altruistic motivation, due to the high costs associated with the procedure. While some from the Catholic church argued over the moral status of embryos within the scope of IVF, one study found that up to two thirds of Catholics were accepting of the technology. Another argument that has persisted is if a child born via IVF with a donated egg or sperm cell has the right to know the identity of their biological parent. In 1984 after the program accomplished one of Australia's first live births from a frozen embryo, further debated ensued over whether it was ethical to leave embryos frozen in storage for a long period of time. Scientists raised concerns such as not knowing whether such the process could cause abnormalities or damage to the embryo later on when thawed and implanted. In 1987, some feminists opposed the IVF process, claiming that it was an exploitation of a woman's body by a then male-dominated profession.

The Monash IVF research program's early accomplishments validated that IVF was a viable treatment for infertility among both men and women. As of 2020, the research program continues to treat men and women directly in many locations throughout Australia.

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