Ericsson Method of Sperm Separation

By: Blyth, Alyse Keywords: Ronald Ericsson Sperm separation Sex Chromosome Sperm cells Sex predetermination

In 1973, Ronald Ericsson developed the Ericsson method, which is a technique used to separate male sperm cells from their genetic material. Ericsson, a physician and reproduction researcher, developed the method while conducting research on sperm in isolation. In Berlin, in the early 1970s, he found that sperm cells that carry male-producing Y chromosomes move through liquid faster than the cells that carry female-producing X chromosomes. As a result of his findings, Ericsson suggested suspending a semen sample in a viscous liquid made from albumin protein, and collecting only sperm that quickly pass through the liquid. Shortly after Ericsson described his method, researchers demonstrated that it was effective for sex selection. However, later studies contested those results. Despite that, the Ericsson method has still been utilized by couples in 2018 as a means of sex selection, and was the first sperm separation technique used in combination with artificial insemination to enable people to select the sex of their children.

Humans have two sex chromosomes, one passed down from each parent, which affect their biological sex characteristics. People with two X chromosomes are biologically female, while people with one X and one Y chromosome are biologically male. Since females have two X chromosomes, they are able to contribute only an X chromosome to their offspring. Males have both X and Y chromosomes and can therefore contribute either an X or a Y chromosome to their offspring. Therefore, male sperm cells are responsible for determining the sex of an embryo. If the male sperm cell that fertilizes an egg cell contains an X chromosome, the embryo is female. If the male sperm cell contains a Y chromosome, the embryo is male. The mechanism of this process is called sex determination, or the ability of sperm cells to move throughout the female reproductive tract to reach and fertilize an egg, as seen in their capacity for swimming. A sperm’s swimming ability can indicate how successfully it can move and fertilize an egg.

During the late twentieth century, emerging research suggested a difference between X chromosome-bearing sperm cells and Y chromosome-bearing sperm cells. In the 1960s, Landon B. Shetles, a researcher and physician who specialized in human reproduction, claimed that there were physical differences between the two types of male sperm cells. Shetles’s idea was stimulated in part by an understanding of embryonic differentiation, a process by which the development of one sex occurs. However, other researchers have contested the method’s effectiveness at skewing the sex ratio in favor of males. In 1994, Ericsson published an article in the journal *Human Reproduction,* which stated that a strong desire to have a child of a particular sex often causes couples to have many children until their favored sex is achieved, and that utilizing his method of sperm separation for pre-conception sex selection would therefore reduce the society’s chance of possible overpopulation.

**Sources**


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