

**MicroSort®: Technology Separates The Boys from the Girls**  
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Many of us know someone who would desperately like to have a child of one gender or the other. Perhaps a couple has one or more children of one gender already and would like to have another child --- but would only consider doing so if the 50/50 odds could be shifted in favor of the other gender. Or, perhaps a couple already seeking fertility treatment has one child, and would prefer that the next child is the other gender if possible. Yet another couple may want to avoid passing a gender-linked genetic disease to their child. If a scientifically proven method of gender selection existed, most of these individuals would consider using it.



The Huntington Reproductive Center, in partnership with the Genetics and IVF Institute, is currently investigating the only proven gender selection technology presently available. This technology is called MicroSort® and is now available at MicroSort West in southern California. MicroSort® is now being utilized as part of an FDA clinical trial for preconception gender selection process. This research began in the early 1990s.

When a sperm with a Y chromosome fertilizes an egg, it makes a boy. When an X chromosome bearing sperm fertilizes, it makes a girl. Any given sperm sample contains an even (50/50) amount of X (female) and Y (male) bearing sperm. MicroSort uses a machine called a flow cytometer to sort sperm such that the sorted sperm population is enriched in either X (female) or Y (male) bearing sperm. Once the sperm has been sorted, it can be used with assisted reproductive techniques to achieve a pregnancy. Since it is in a clinical trial, patients must be fully informed of the potential risks and benefits.

**How does the technology work?**

The separation of male and female sperm is based on the measurable difference in the quantity of genetic material (DNA) they contain. The sperm absorbs a dye, which attaches temporarily to the DNA, or genetic material, inside the individual sperm. When exposed to laser light, the dye fluoresces. Since the X chromosome is larger than the Y, there is more DNA for the dye to attach to and, consequently, the sperm with the X chromosomes will fluoresce more brightly than those with Y chromosomes. The flow cytometer is able to pick up these differences in brightness and separate the sperm as they move through the machine one at a time.

Currently, MicroSort sperm sorting technology improves the chance of a female pregnancy to 89.5 percent after sorting. For a male, MicroSort has improved the chance to 73.6 percent.

## **How does a couple use the sorted sperm to become pregnant?**

The most common method uses the sorted sperm with intrauterine insemination (IUI). The woman is monitored carefully to establish the time of ovulation. Some of this monitoring can occur with her local physician and/or the use of ovulation predictor kits. Insemination is performed very close to the time of ovulation. On the day of ovulation the husband produces a sperm sample, the sperm are sorted for the desired gender, and the insemination with the sorted sperm occurs later that same day.

For patients who need additional assistance achieving pregnancy, sorted sperm can be used with IVF. Sperm can be sent frozen, then sorted and returned to a local IVF center, allowing the couple to have IVF close to home. Please refer to the MicroSort website [www.microsort.com](http://www.microsort.com) for a full listing of physicians (collaborators) participating as part of the clinical trial.

MicroSort has accomplished more than 350 pregnancies. Based on the data so far, the likelihood of having a normal, healthy baby is not different from that of the general population.

## **Who qualifies for gender selection by MicroSort?**

Currently couples must be in one of two categories. A couple with a history of an X-linked disease, where the woman is a known carrier, may qualify for free treatment with MicroSort. Examples of such disorders include hemophilia and Duchenne muscular dystrophy. Other couples can choose to use MicroSort for family balancing. Family balancing couples must be married, the wife must be between ages 18 and 39, and they must have at least one child and be selecting for the less represented gender of children in their family.

## **Is MicroSort here to stay?**

MicroSort is the only scientifically verifiable method of pre-conception gender selection. It is showing positive results after more than 350 pregnancies. For couples today who are considering options for having a family, especially those with chromosome-linked concerns, MicroSort gender selection is of serious interest. As the science continues to improve, we expect that MicroSort will become a routine part of family planning.

## **Editor's Note:**

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