

What is assisted reproductive technology?

Assisted reproductive technology (ART) usually means the set of techniques that make procreation possible apart from the natural process. ART uses sperm cells from a man and egg cells from a woman. There are two principal techniques of ART:

- 1 - natural method
 - medically assisted natural procreation (Billings Method, NaProTechnology)
- 2 - artificial methods
 - artificial insemination
 - in vitro ("test tube") fertilization with embryonic transfer (IVF)



Micro-injection of a sperm cell into an ovum with a pipette (ICSI).

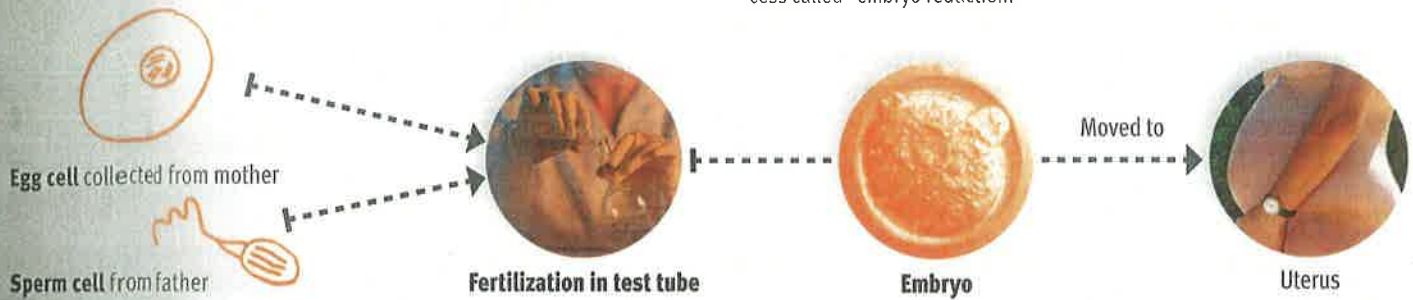
Artificial methods of ART

Artificial insemination

- 1 - Sperm is collected.
- 2 - The sperm is introduced directly into the woman's cervix.
- 3 - The egg is fertilized in the woman's fallopian tube. The rest of the pregnancy proceeds normally.

In vitro fertilization

- 1 - Sperm is collected from the father and several ova are collected from the mother.
- 2 - The ova are brought into contact with the sperm in vitro (in a test tube). Fertilization takes place. Several embryos start to grow.
- 3a - Several embryos are created, but usually only 1 to 3 are transferred into the mother's uterus. Then pregnancy proceeds as usual, unless there are complications. Multiple pregnancies (twins, triplets, and such) are common. However, with a multiple pregnancy that results from IVF, often one or more of the embryos are then killed in a process called "embryo reduction."
- 3b - The embryos that are conceived but not transferred are either destroyed if they do not "look well enough," or frozen to be transferred later if the parents want another child. If the parents do not want to transfer them for a new pregnancy, they are preserved cryogenically (frozen) indefinitely.



Artificial methods of ART

IVF with intracytoplasmic sperm injection

Intracytoplasmic sperm injection (ICSI) consists of introducing the sperm cell selected by the technician directly into the ovum. This technique was first used to compensate for the infertility of the father. It runs the risk of transmitting to the child the genetic anomalies responsible for the father's infertility.

Since the success rate of ICSI is better than for classic in vitro fertilization, ICSI is used in most cases, even when the father does not suffer from infertility. (See Pierre Jouannet, "Peut-on réduire le risque de grossesse multiple après fécondation in vitro?" *Bulletin épidémiologique hebdomadaire*, June 14, 2001.)

IVF with donated gametes

Depending on the country, several possibilities of medically assisted procreation can be considered. Regulatory control of ART, however varies from country to country. In the U.S., for example, there is no regulation. In the U.K. anonymous sperm donation is prohibited.

In some countries, where one of the couple cannot provide gametes (no sperm production, troubles ovulating...), the law allows them to call on an anonymous donor apart from the couple in order to have either sperm or ova.

IVF with a "surrogate mother"

"Surrogate mothers" are women who are willing to "rent their wombs" when the woman seeking ART is not able to carry a pregnancy to term. The "surrogate mother" carries and brings into the world the couple's child after it has been conceived by IVF and transferred into her uterus. At birth she turns the child over to the couple, usually for payment.

Sometimes the "surrogate mother" becomes pregnant by artificial insemination with the father's sperm; in this case she is also the biological mother of the child.

The practice of surrogate mothers is illegal in France, but is authorized in almost all states in the United States.

A fact you can't ignore

On average, 17 embryos are conceived in order to obtain 1 live birth. 16 embryos die.

Frequently asked questions

“Does freezing the embryo affect it?”

Freezing “surplus” embryos has risks. Statistical studies show that laboratory mice that had been frozen as embryos had genetic changes.

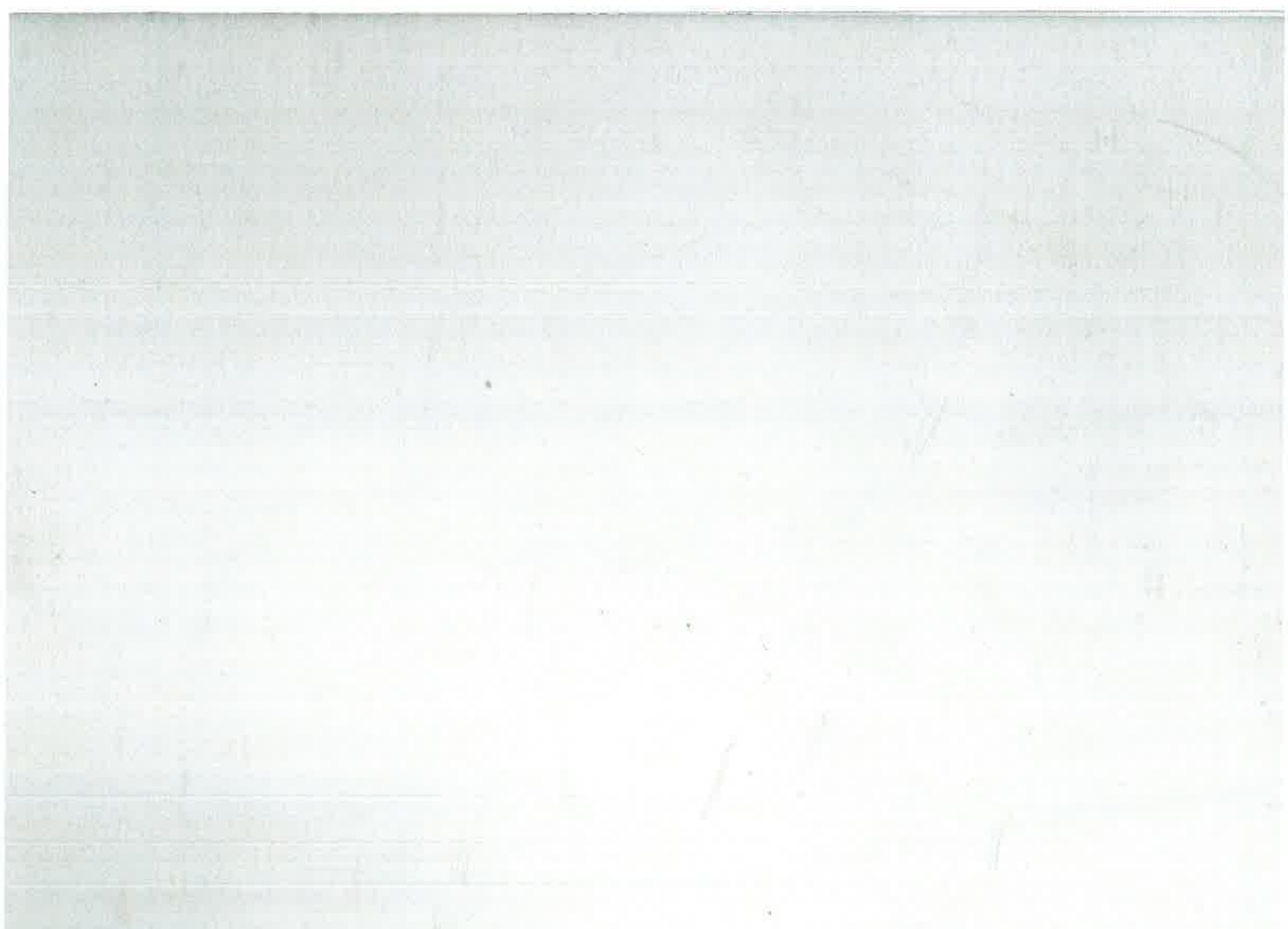
“Are there physical consequences in a child who is conceived in vitro?”

Yes. Besides a higher risk of premature birth, scientific studies reveal a 25% increase in birth defects among children conceived by IVF or intracytoplasmic sperm injection compared with children who are conceived naturally. In particular, anomalies of the cardiovascular, urogenital, and skeletal-muscular systems are observed.

“Are there psychological consequences for a child conceived with a donated egg or sperm?”

Yes. Children conceived by in vitro fertilization with donated gametes can experience similar problems as some adopted children. They can be affected by not knowing their biological parents. We all like to know where we came from—to know our parents, who gave us the color of our eyes, our hair, our smile.

With in vitro fertilization, embryos are conceived outside the mother’s body. From the moment of fertilization, these embryos are human beings, just like those who are conceived in vivo, even if they are not implanted into the mother’s womb. To destroy these embryos, whether in vitro or in vivo, is to abort them.



Frequently asked questions

“Are there consequences for the couple who uses IVF to conceive a child?”

Yes. Assisted reproductive technology is very trying psychologically for the couple because of the intrusion of medical personnel into their intimate relations (for example, a questionnaire about their sex life, the fertilization of the woman's ovum and its transfer, or the insemination of a woman by the doctor instead of her husband). The father finds that he is excluded from the conception of his child, which has become a collaboration between the wife and the practitioner. The parents also suffer psychologically from freezing and destroying some of the embryos.

“Is it risky for the mother?”

Harvesting egg cells can be dangerous. It involves preliminary stimulation of the ovaries and the removal of the ova from her abdominal cavity. The hyperstimulation of the ovaries can result in hospitalization, development of arterial or venous thrombosis, and on rare occasions, death.

“Are there alternatives to ART?”

Assisted reproductive technology doesn't treat infertility; it tries to work around it. Today, medicine can treat the actual problem. There are techniques that can help couples who think they are sterile to achieve a pregnancy: the **Billings Method**, which offers a better knowledge of fertility cycles, and the more recent **NaProTechnology**, an inter-disciplinary approach to procreation (including observation of one's fertility, medical treatments, and surgical interventions). NaProTechnology techniques achieve better rates of success than those of ART (for more information, see naprotechnology.com). Finally, the couple can also resort to adoption and offer their home to a child.

“Is IVF connected to embryo research?”

Yes. Research on human embryos is a direct result of IVF. Without IVF, it would be impossible to designate “usable” embryos for research. In some countries the growing supply of “surplus” embryos allows some researchers to use these embryos as subjects of laboratory experimentation. This supply has even served as an argument in bioethics debates: “Rather than allowing or causing these thousands of children to die ‘uselessly,’ give us the right to use them for our research, even if that will kill them.”

Ethical reflections

A child at any cost?

In the name of human rights, a child cannot be considered as an object at the disposal of others. A child is not a right.

Instead of replacing the act of love between two spouses, research ought to seek to cure their sterility. The IVF process is very burdensome for the couple and results in a live birth less than half of the time: this disappointment, considering the costly procedures that they authorized, can be a very bad experience.

Protecting gametes and procreation from manipulation

Gametes are unlike any other cells because they are of no use for the life of the body that produced them. The only function of gametes is to conceive a new human being by transmitting the genetic heritage from the father and from the mother.

They should therefore be treated with respect and reserved for the procreation of the couple's children. For that purpose they are irreplaceable, and they should not be manipulated.

ART techniques have brought about a revolution by taking ova out of the woman's body and exposing them to laboratory scrutiny. Gametes are now used for IVF (even for another couple) and for the manipulations that result from this (sperm selection, embryo selection, experimentation on embryos, preimplantation genetic diagnosis, and surrogate motherhood).

These manipulations offend human dignity because they dissociate procreation from sexual union and transform gametes into laboratory material.

"So-called parental plans are the alibi of the medical authorities."

CATHERINE LABRUSSE RIOU,
lawyer

Ethical reflections

IVF and embryo selection

On average, in vitro fertilization results in the conception of 6 to 12 embryos per try, and usually 1 to 3 are transferred into the mother's uterus. How are these 3 embryos chosen?

- The medical team selects those that seem strong enough to survive. Those that do not have these qualities are destroyed.
- Then, if more than 1 or 2 embryos develop during the pregnancy, the mom is asked to undergo "embryo reduction," in other words, the abortion of 1 or more children to limit the risks of a multiple pregnancy.

Resorting to procreation outside the woman's body promotes the qualitative selection of embryos, which is a form of eugenics. There is no IVF without embryo selection. Some kinds of embryo selection, such as preimplantation genetic diagnosis, are possible only with IVF.

"Surplus" embryos

Do you know any surplus adult human beings? Can we say that a human being is superfluous? An embryo whose parents have no plan for him is disposed of in one of three ways:

- We can preserve him in a freezer.
- He is destroyed (which is to kill a human offspring).
- He becomes the subject of scientific experiments or research (which amounts to making a human being laboratory material).

"Wanted children"

The expression "wanted child" was developed during the debates about abortion.

It reflects a mindset that regards a child as a human being only if his parents want him to be born. This makes the status of a human being depend on their choice!

In fact, even if the parents no longer have plans for their child, the child, whether he is an embryo of a newborn, is still a human being and has the right to life.

Frozen embryos

In 2010 there were about 500,000 to 600,000 frozen embryos in the United States. These are human beings. Who would ever think of freezing their child until they had time to care for him?

Embryos for research

It is not legitimate to use human embryos for research because the research exploits and kills those embryos. These are human beings, and no one has the right to dispose of a human being's life, even to save another life.

"Act in such a way that you treat humanity as an end, and never merely as a means." (Immanuel Kant)

5 parents

"I am the product of IVF conducted with the sperm of a man, my biological father, and the ovum of a donor, my biological mother. Then I grew inside the body of another woman, my surrogate mother.

"Now I live with my 2 adoptive parents. . . . **Who are my parents?**"

"As of 2003 the estimated number of frozen embryos at IVF clinics in the United States was 400,000. . . . That number increases annually by about 19,000, which puts estimates in 2010 at between 500,000 and 600,000."

(E. Christian Brugger)



Testimony

"I constantly think about the frozen embryos..."

"I'm the mom of a little 3-month-old girl who was conceived by IVF, and I think constantly about the 8 other frozen embryos. Since we, the parents, have no plans for future pregnancies, and since I cannot bring myself to destroy them, I do not know what to do. . . . The medical team that enabled us to realize our dream is not there for all these questions. . . . I thank you for your help."

ANNE



“God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them, and God said to them, ‘Be fruitful and multiply, and fill the earth and subdue it....’ And God saw everything that he had made, and behold, it was very good. And there was evening and there was morning, a sixth day.” Genesis 1:27-28, 31

What the Church says...

A child is a gift

“A child is not something owed to one, but is a gift. The ‘supreme gift of marriage’ is a human person. A child may not be considered a piece of property, an idea to which an alleged ‘right to a child’ would lead. In this area, only the child possesses genuine rights: the right ‘to be the fruit of the specific act of the conjugal love of his parents,’ and ‘the right to be respected as a person from the moment of his conception.’”
Catechism of the Catholic Church, no. 2378

Marriage, the only setting worthy of responsible human procreation

“Out of respect for human dignity, the Church cannot approve of the technologically assisted conception of a child through artificial insemination or fertilization. Every child has in God’s plan the right to have a father and a mother, to know his parents, and if at all possible to grow up surrounded by their love. Artificial insemination and fertilization with the sperm of another man or the ovum of another woman (heterologous artificial insemination and fertilization) also destroys the spirit of marriage, in which husband and wife have the right to become a father or a mother only through the other spouse. But even ho-

mologous artificial insemination and fertilization (in which the sperm and the ovum come from the spouses) make a child the product of a technological procedure and does not allow it to originate from the loving union of a personal sexual encounter. If the child becomes a product, however, then that leads immediately to cynical questions about product quality and product liability.” *YOUCAT*, no. 423

The temptation of omnipotence

“The gift of life which God the Creator and Father has entrusted to man calls him to appreciate the inestimable value of what he has been given and to take responsibility for it.... Various procedures now make it possible to intervene not only in order to assist but also to dominate the processes of procreation. These techniques can enable man to ‘take in hand his own destiny,’ but they also expose him ‘to the temptation to go beyond the limits of a reasonable dominion over nature.’”
Donum vitae, Introduction no. 1