

# How can genetic testing help you with your IVF treatment?



**Igenomix**<sup>®</sup>  
PART OF VITROLIFE GROUP

***In vitro fertilization, commonly referred to as IVF, is the assisted process of fertilization to help in the conception of a child. IVF utilizes a controlled laboratory environment that can significantly increase the chance of having a baby.***

With IVF, a sperm and egg are combined, to create an embryo that is incubated and carefully monitored as it begins to grow and develop over the next 5 to 6 days. Embryos that develop successfully can be transferred back into the uterus or frozen for a future transfer. About 10-12 days after an embryo transfer, the patient will take a pregnancy test.

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**01**

# Why should I start IVF treatment?



## INFERTILITY

- | Female ovulation disorders
- | Blocked, damaged or removed fallopian tubes
- | Premature ovarian failure
- | Male infertility
- | Others

## OTHER REASONS

- | Genetic disorders
- | Carrier of genetic disorder
- | Same sex couples using gamete donors
- | Fertility preservation



In vitro fertilization is typically used when couples have been unable to conceive after trying other types of fertility treatments. IVF can be used to treat infertility caused by a number of reasons, including female ovulation disorders; premature ovarian failure; blocked, damaged or removed fallopian tubes; and male infertility.

IVF may also be useful for fertile individuals seeking to pursue genetic testing of embryos, or PGT, for a hereditary disorder, for same-sex couples who wish to use gamete donors, for individuals who require a gestational carrier, or for fertility preservation.

# What is involved in an IVF cycle?



An average IVF cycle takes at least **8 weeks** from **consultation to transfer**.

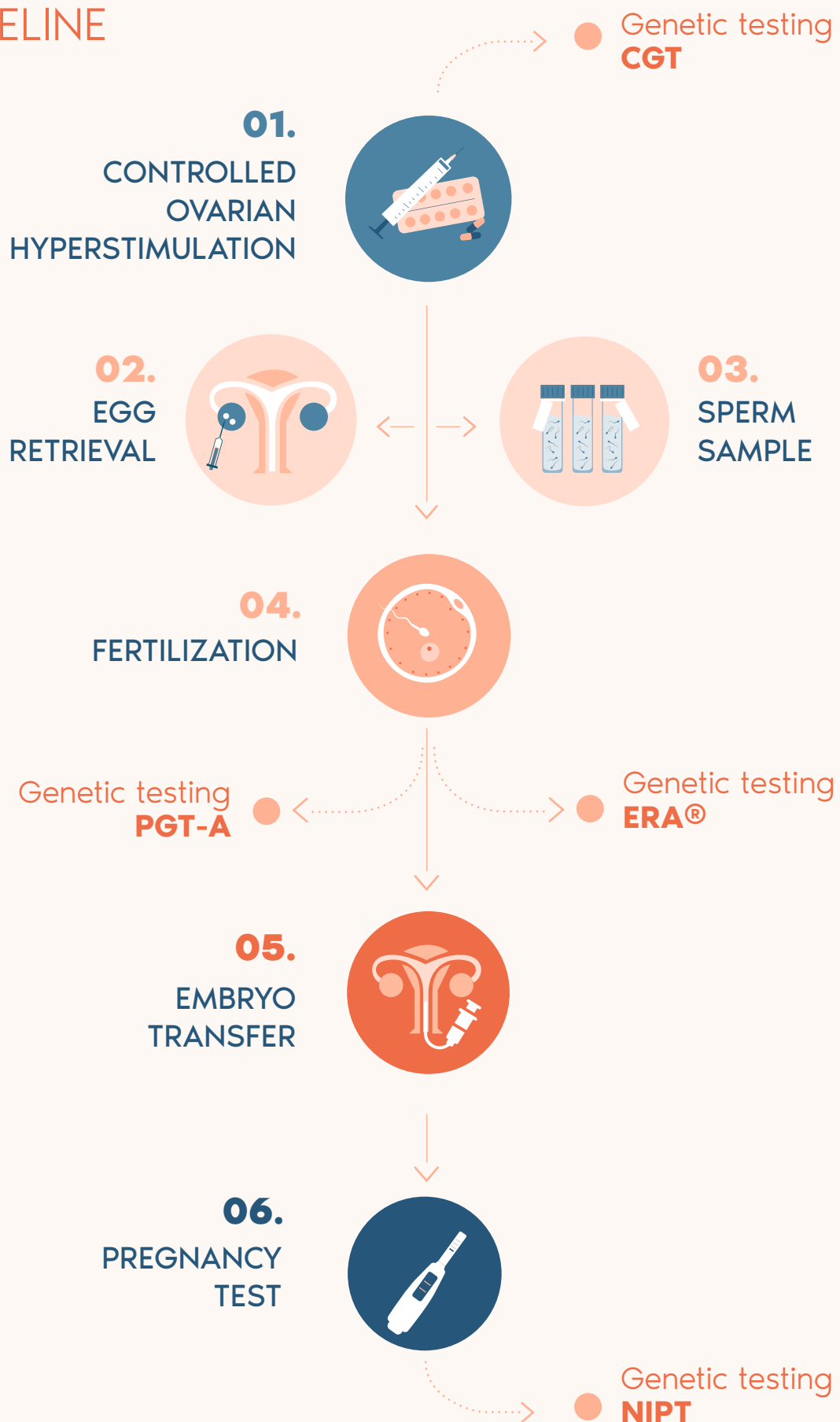
Depending on the circumstances of each patient, the timeline can vary significantly. We can sketch out a basic timeline and explain the important steps along the way.



Your IVF doctor and nurse are best equipped to answer questions about your specific treatment plan and timeline.



# IVF TIMELINE





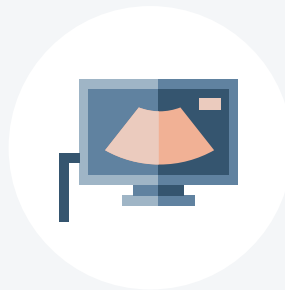
PHASE

**01**



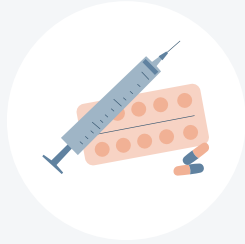
## Controlled Ovarian Hyperstimulation

Egg production stimulated by hormone therapy.



After the initial consultation and the pre-treatment preparation for IVF (including blood panel, ultrasounds, infectious disease screening, uterine evaluation or male fertility testing), birth control pills may be started to regulate your menstrual cycle and prepare your ovaries. At your doctor's discretion, you will begin a process known as **Controlled Ovarian Hyperstimulation (COH)**.

There are two main parts to the COH process:

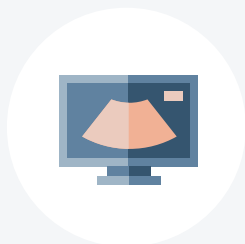


## **Fertility medications**

(for about 2 weeks)

Oral fertility medications such as clomid and/or injectable follicle stimulation hormones are used to stimulate the follicles in your ovaries to mature more eggs than they typically would in a normal cycle. The goal is to produce as many eggs as is safe for your body.

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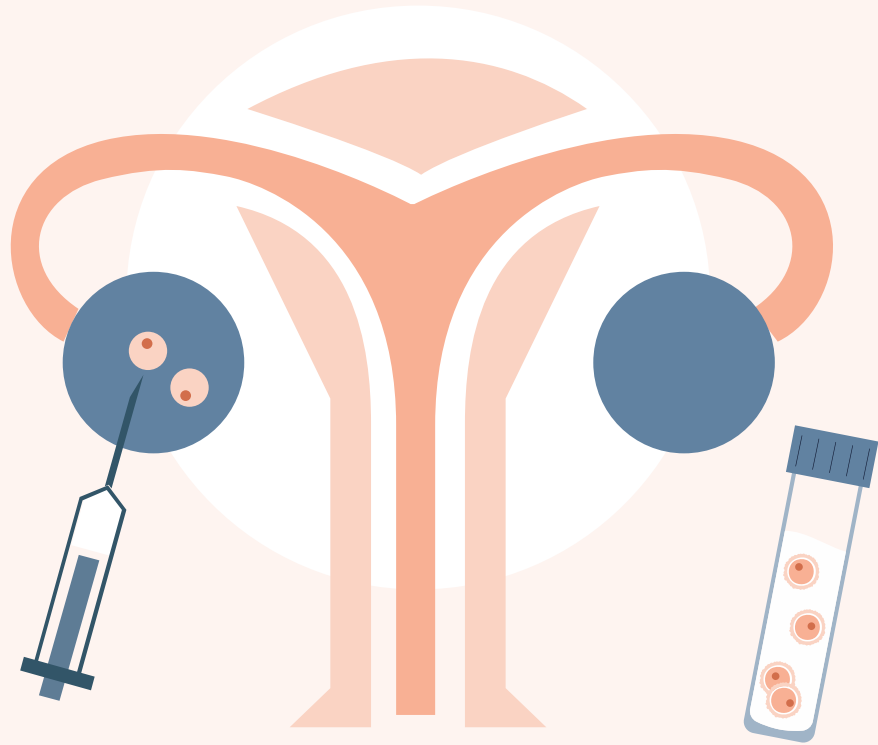
## **Monitoring visits**

Ultrasounds and blood tests are used to keep a close eye on the development of your follicles and eggs.



## Egg retrieval

From ovary



After about 10-12 days of fertility medication, once monitoring shows that your follicles have grown to an appropriate size, it is time to trigger the final maturation of the eggs with hCG and schedule the **egg retrieval, which will be performed under ultrasound guidance.**



## Sperm sample

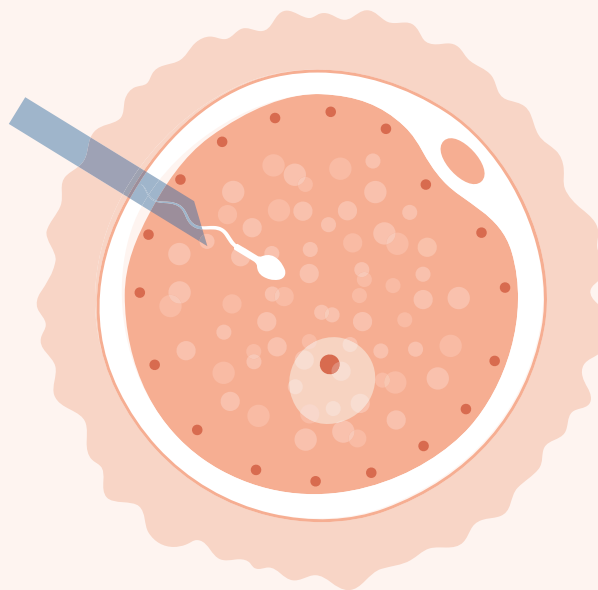
Fresh or frozen sperm sample from partner or sperm donor



If you are going through IVF with a partner who will be providing a semen sample, it will be collected on the same day as your egg retrieval, or the sperm could be frozen beforehand.



## Fertilization



### Conventional

Eggs and sperm combined to allow fertilization.

### ICSI

Intracytoplasmic sperm injection.

Egg and sperm are combined in the lab. If all goes well, fertilization occurs, and embryos are created.

Intracytoplasmic sperm injection (ICSI) may be a good option when there is a concern for male infertility. In this procedure, a single healthy sperm is injected directly into an egg for fertilization.

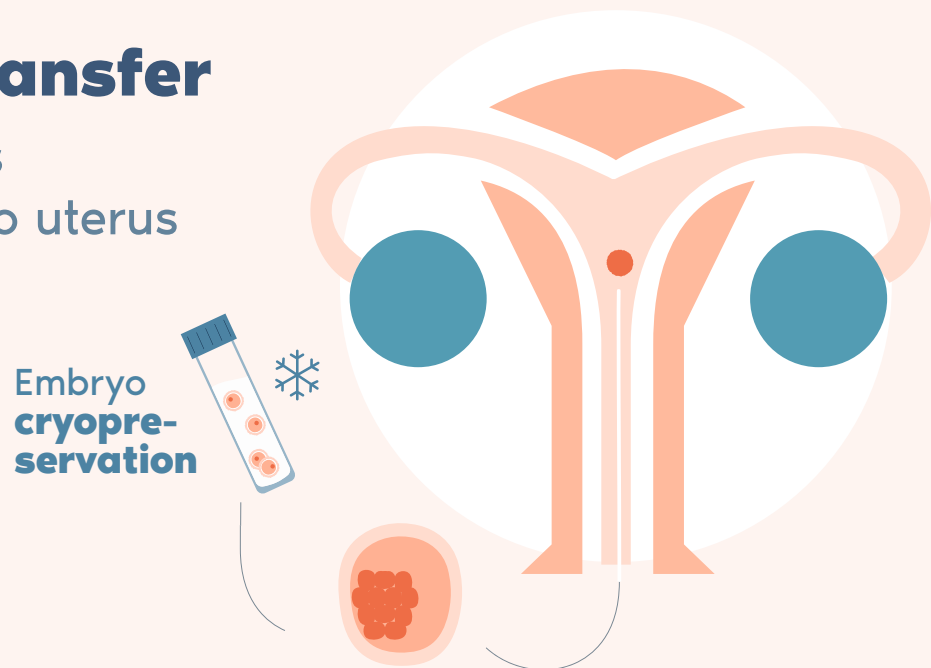
PHASE

**05**



## Embryo transfer

Fertilized eggs  
introduced into uterus



Within 3-6 days after fertilization, embryos are ready for transfer.

There are some additional steps necessary if you will be pursuing preimplantation genetic testing (PGT) on embryos prior to transfer. The embryo or blastocyst is passed into the uterus via a thin, flexible plastic tube, which is gently inserted through the opening in the cervix leading to the interior of the uterus. You will not need sedation for this procedure. It is generally painless, but some women may experience mild cramping.



Any embryos that you do not use in your first IVF attempt can be frozen for later use.



## **Pregnancy test**

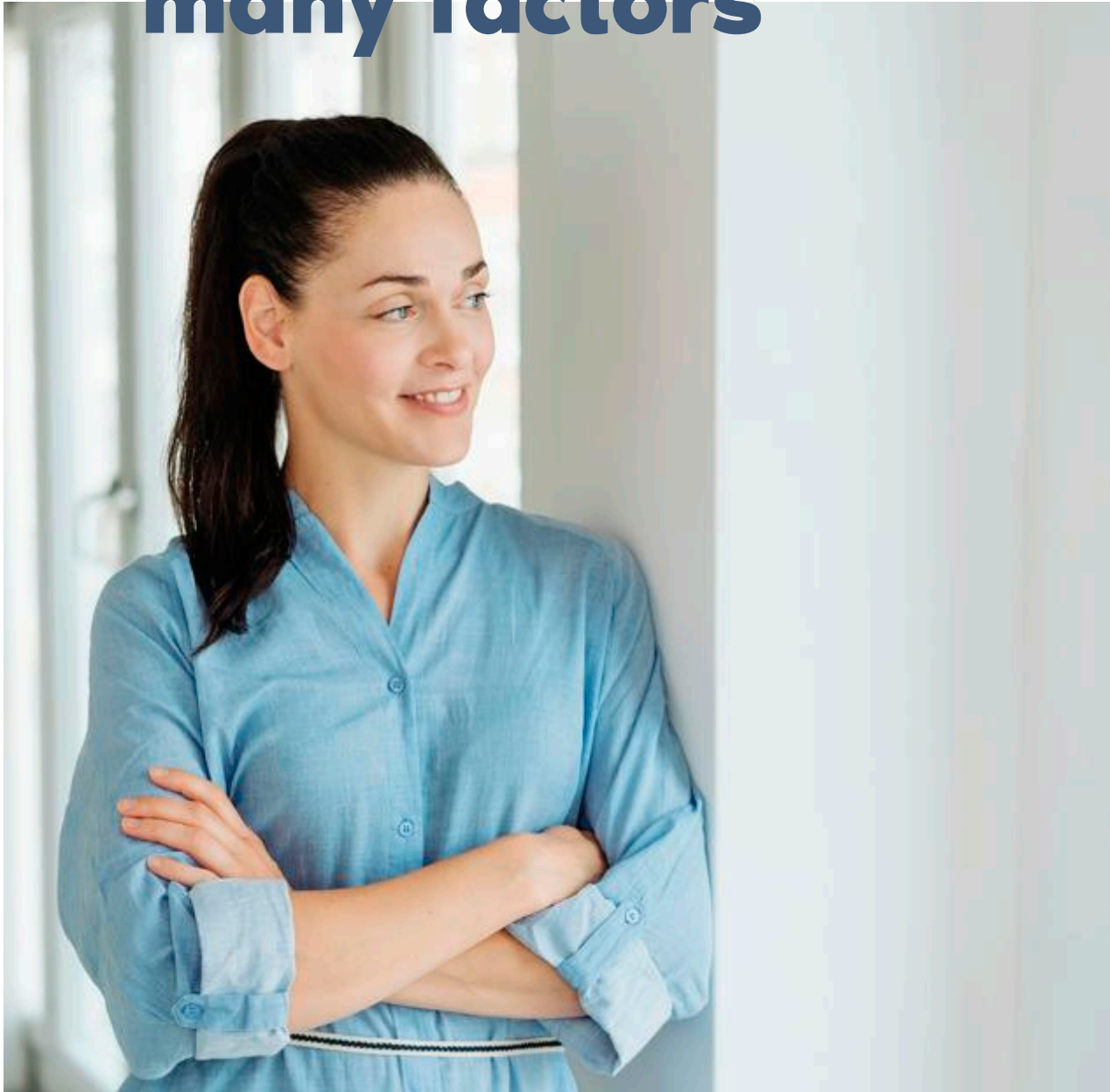
May be done as early as  
10-12 days after embryo  
transfer



Approximately 12 days after the embryo transfer, you will take your first pregnancy test in the clinic.

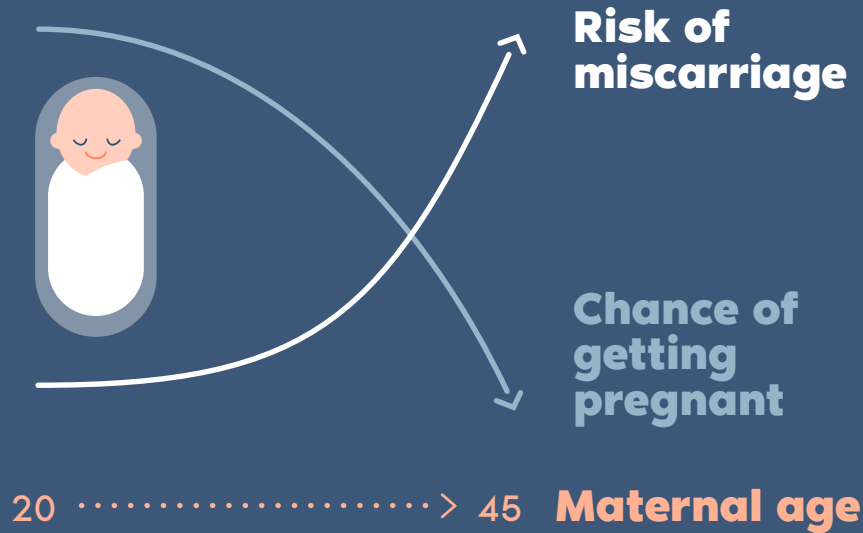
## 03

# The success depends on many factors



It's important to highlight that couples undergoing ART (Assisted Reproductive Therapy) may **require several cycles of treatment to have a baby.**

The age of a woman is the most important factor when a woman is using her own eggs.



Success rates decline as a woman's age increases due to a lower chance of a pregnancy resulting and a higher risk of pregnancy loss.

Infertility affects 1 in 6 couples of child-bearing age

**33%**

is due to female factor

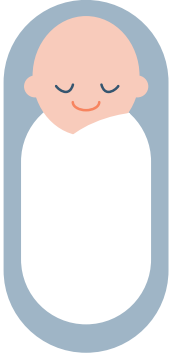
**33%**

is due to male factor

**33%**

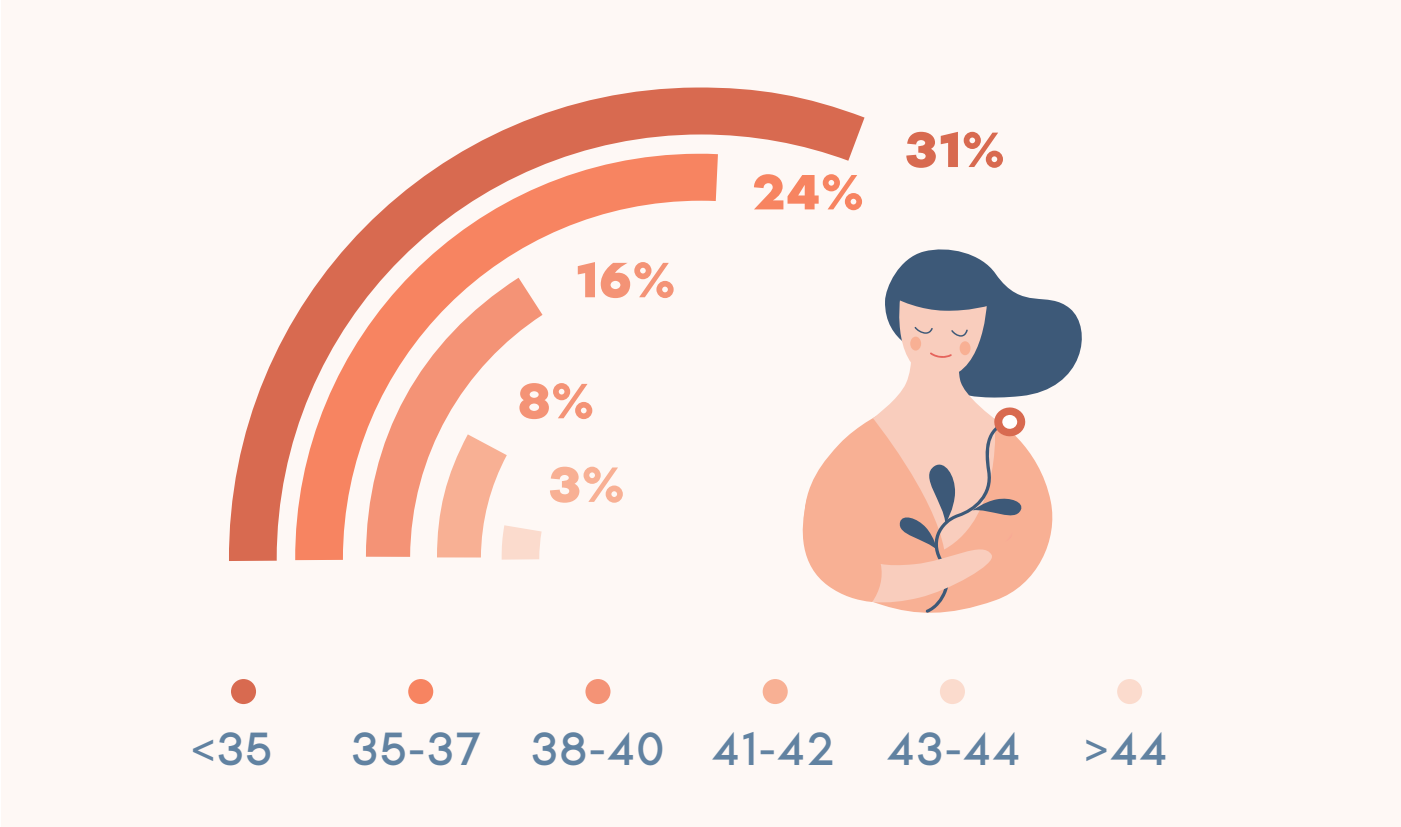
is due to mixed factors or reasons of unknown origin

According to the 2016 National Summary Report of Assisted Reproductive Technology



31% of cycles started in 2016 among women younger than age 35 resulted in live births.

This percentage decreased to 24% among women aged 35–37, 16% among women aged 38–40, 8% among women aged 41–42, 3% among women aged 43–44, and 3% among women older than age 44.



While IVF is not a guarantee, it does increase your chances of having a baby. **More than 8 million babies have been born since IVF started, and around more than half a million babies are now born each year from IVF.**

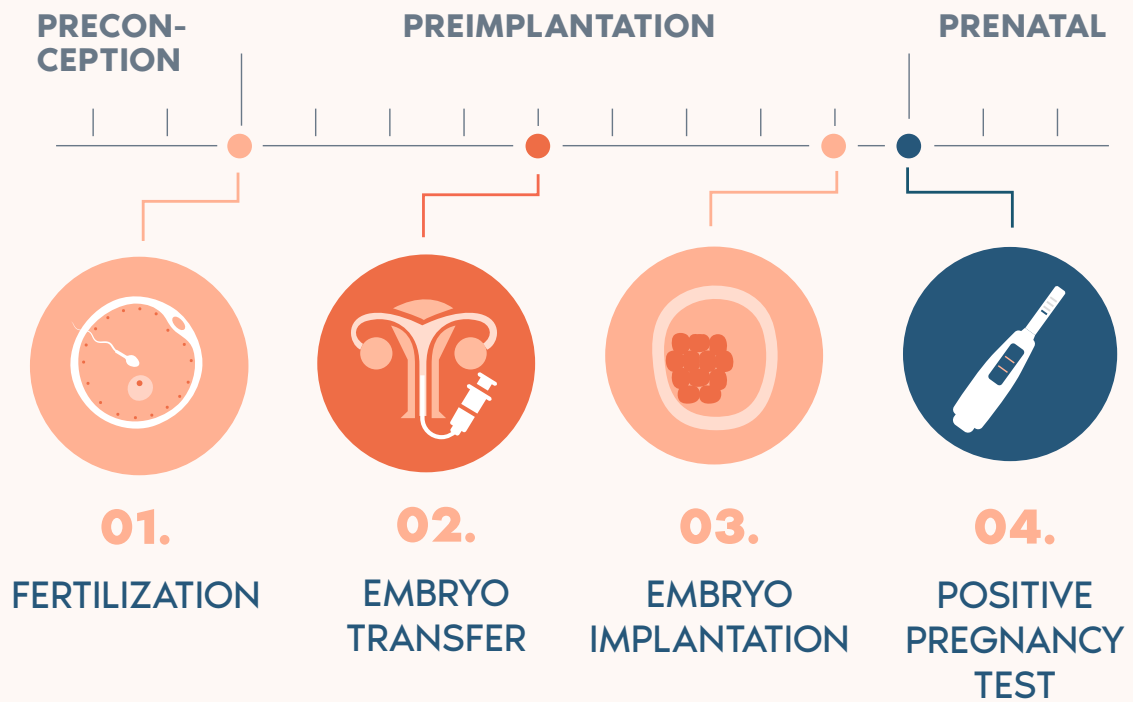


Many factors of IVF are out of your control, but there are a few things you can control that will potentially increase your chances of success. Nowadays, IVF technology is improving very fast, especially in the field of genetics.



# 04

## IVF treatment journey and genetic testing

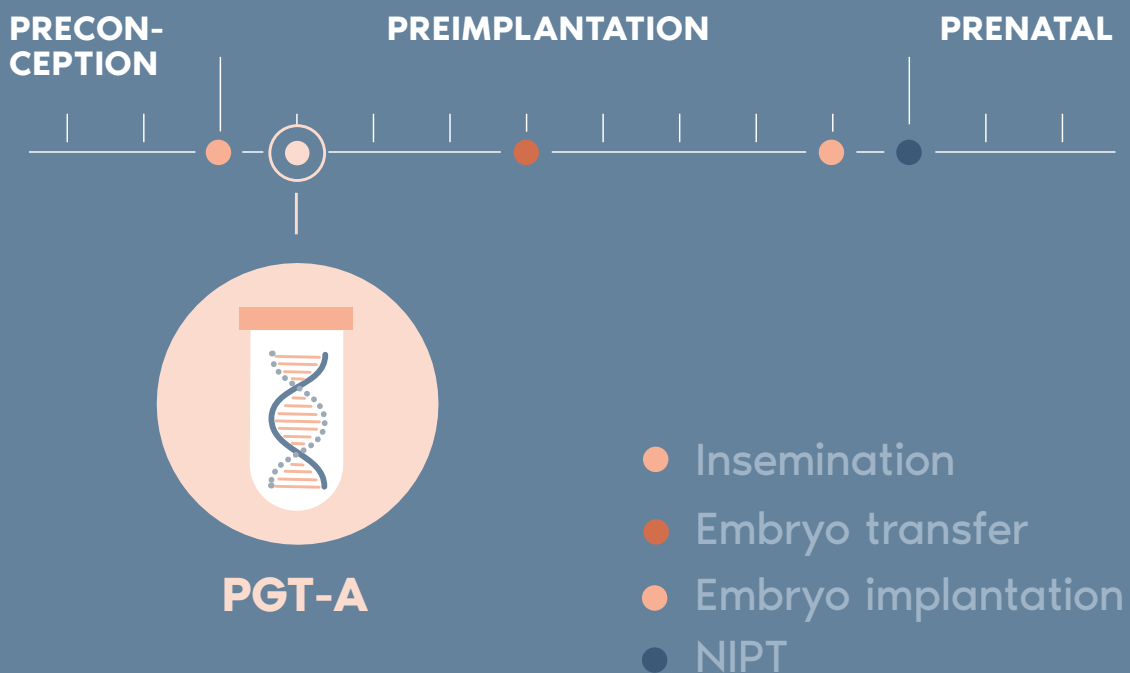


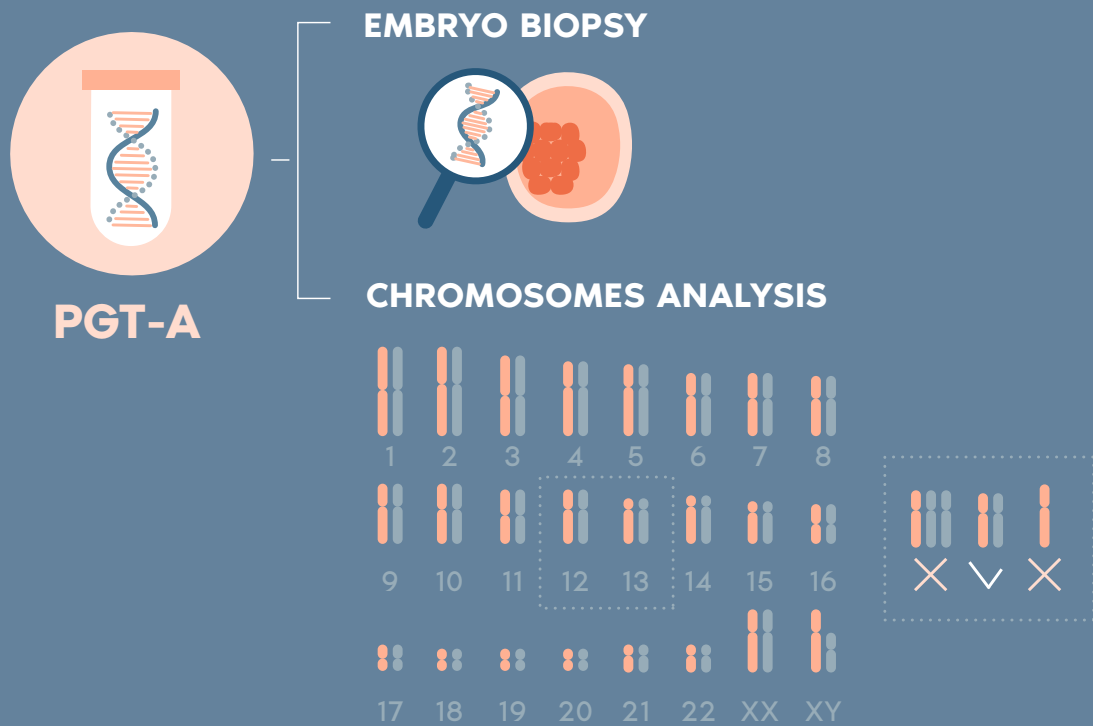
There are several genetic testing options that may be available to you throughout your fertility journey, beginning even before you start your fertility treatment, during your IVF treatment, and even after becoming pregnant.

When going through IVF treatment, it's important to have good quality embryos and a receptive endometrium to maximize the chance of a successful pregnancy.

## PGT-A

Preimplantation genetic testing refers to testing that can be performed on your embryos created through IVF before they will be transferred into your uterus.





Preimplantation genetic testing for aneuploidy, or PGT-A, is a test performed on embryo biopsy samples prior to embryo transfer to predict the number of chromosomes.

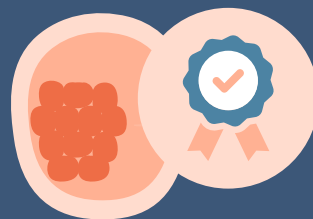
Chromosome abnormalities, such as having an extra or missing chromosome, are common in embryos for women of any age, but the chance increases with maternal age. Embryos with a normal number of chromosomes are most likely to implant and most likely to result in the birth of a healthy baby.

With PGT-A we can obtain information about the embryo's genetic health.

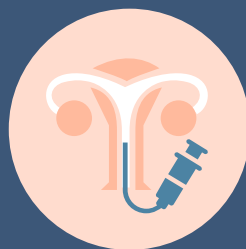
Biopsied samples are analysed to be able to select the best embryo for transfer, improving your chances of having a successful pregnancy.



EMBRYO BIOPSY



SELECT THE BEST EMBRYO

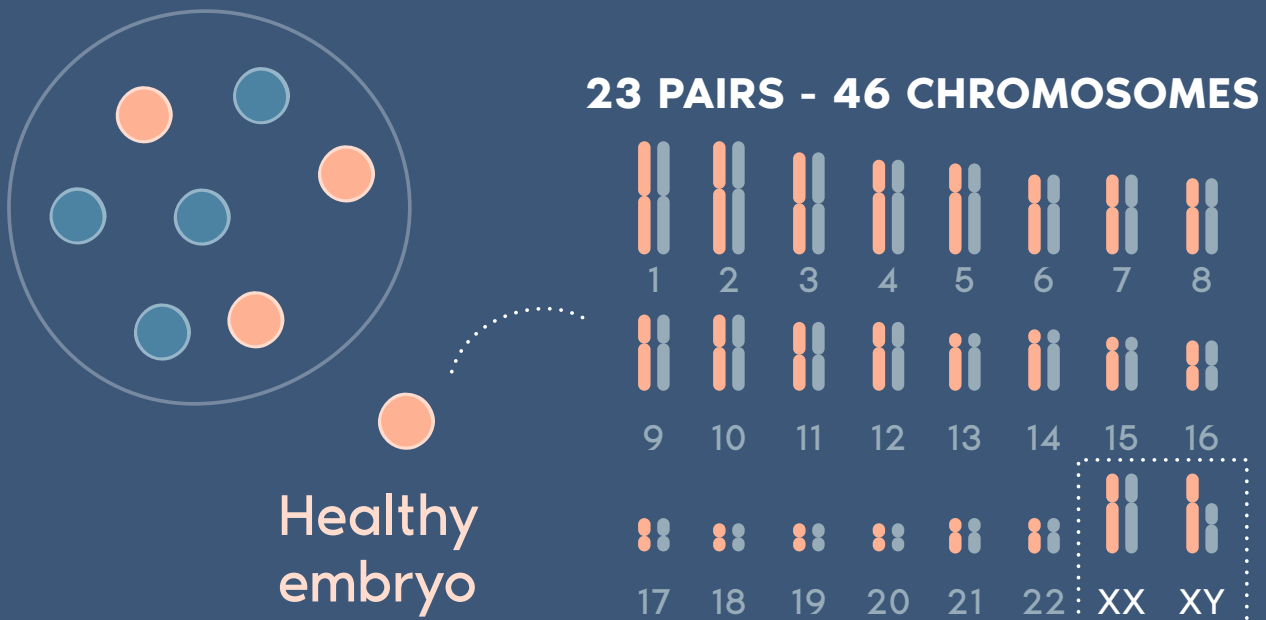


EMBRYO TRANSFER

## Euploid

A healthy embryo typically has 46 chromosomes arranged in 23 pairs. Half of the chromosomes are inherited from the mother and half come from the father. Twenty-two of these pairs, look the same in both males and females. The 23rd pair, the sex chromosomes, decides female or male.

**Embryos whose cells have the correct number of "chromosomes" are called euploid.**

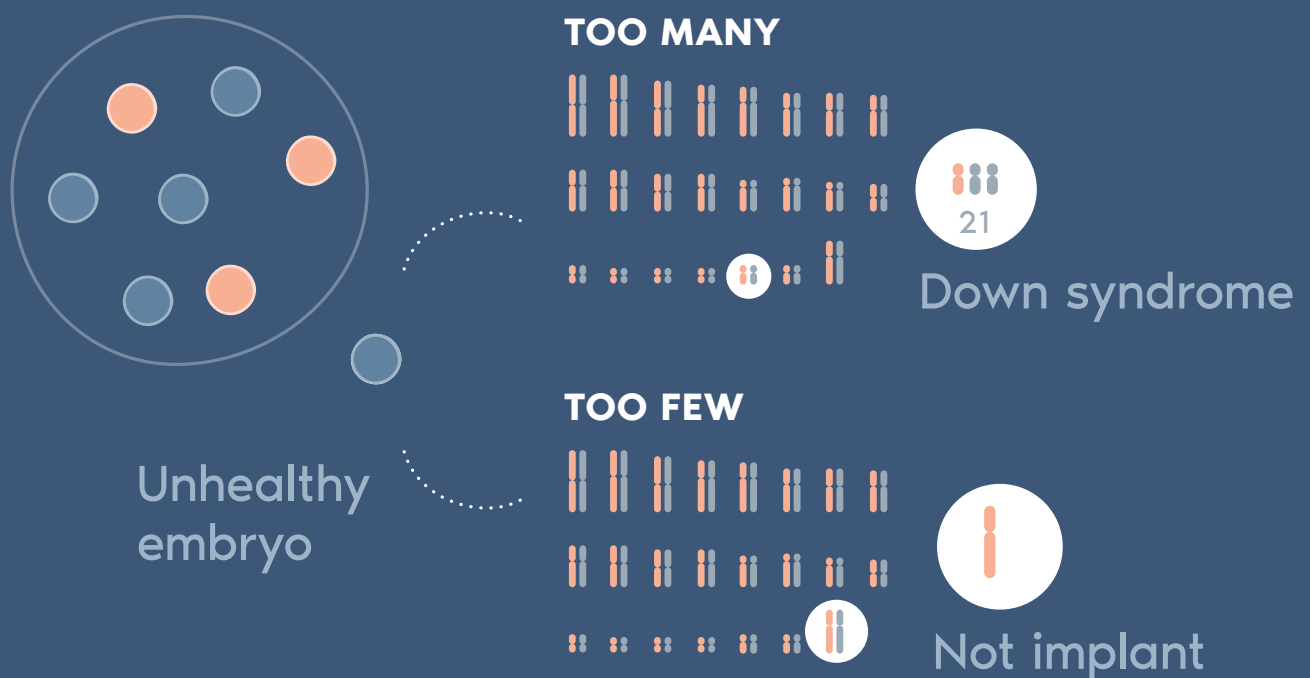


# Aneuploid

**Sometimes, an embryo has too many or too few chromosomes.**

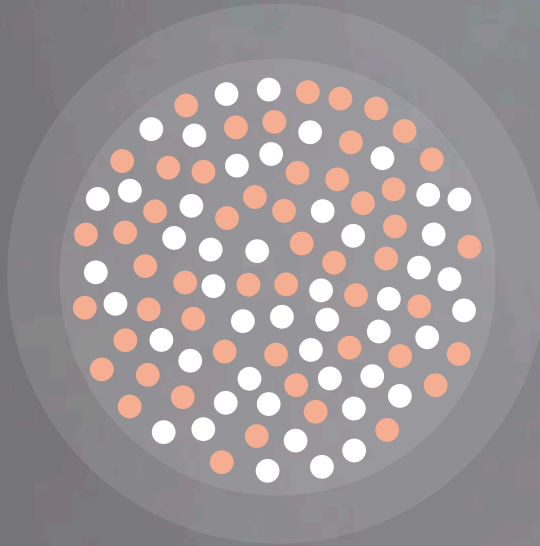
Embryos that do not have 46 normal chromosomes (aneuploid embryos) often develop improperly. Most embryos with extra or missing chromosomes will either not implant or will miscarry during the first trimester.

Some pregnancies do continue and may result in a baby born with some health issues; like Down syndrome which is caused by an extra copy of chromosome 21.



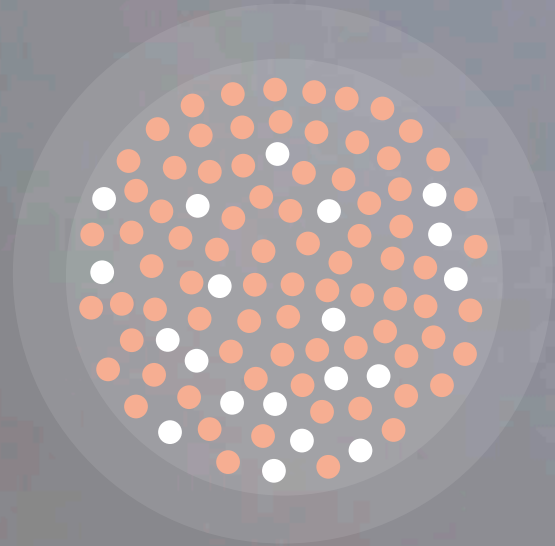


**PGT-A is particularly important for patients over 35**, as aneuploidy rate increases with maternal age from approximately 52%, at maternal age under 35, to approximately 80%, at age 42.



52%

maternal age < 35



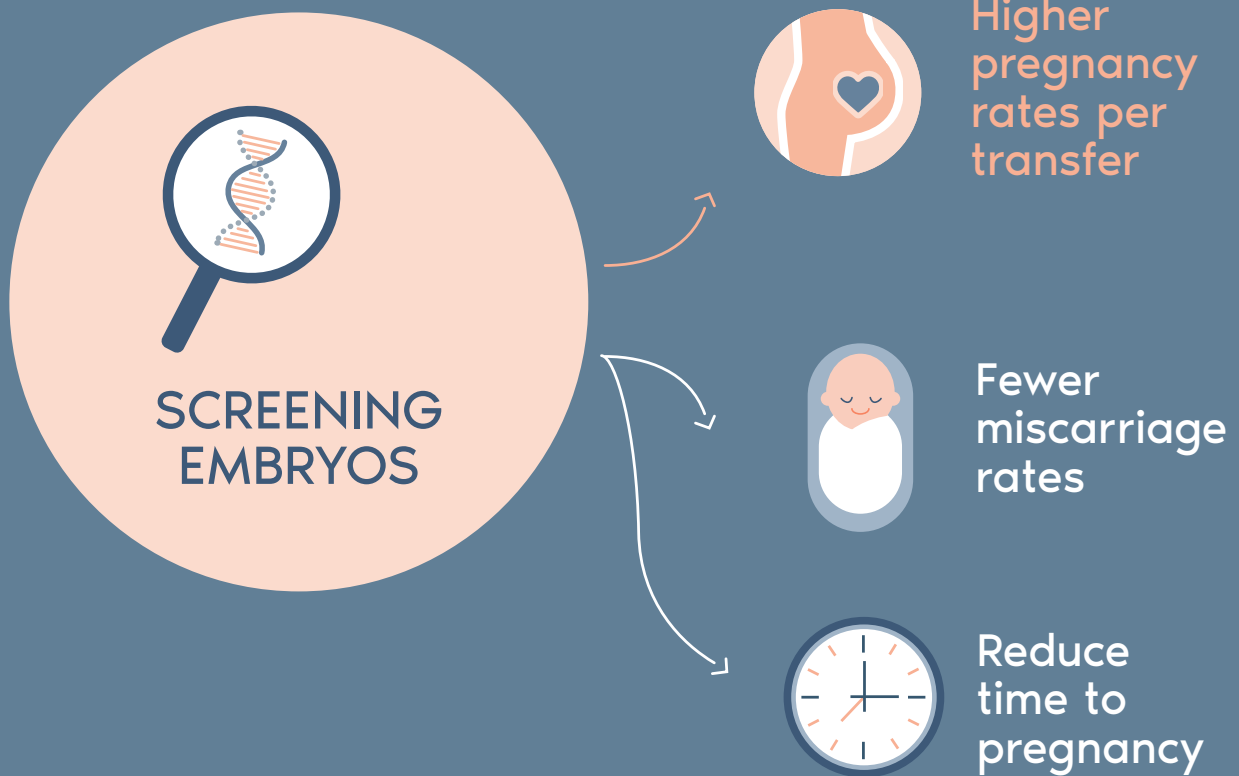
80%

maternal age >42

With most chromosome abnormalities considered incompatible with viable pregnancy.



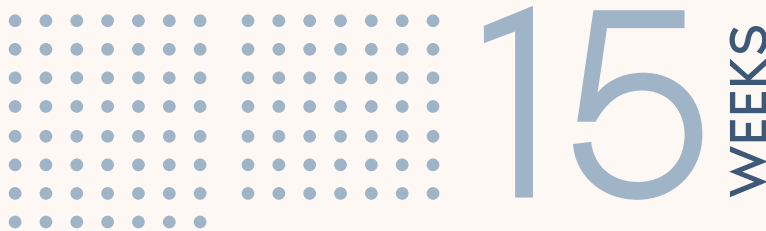
By screening embryos in advance, pregnancy rates per transfer, are significantly increased and the miscarriage rates decreased. It can also reduce time to pregnancy.



As maternal age increases, obtaining healthy embryos for IVF transfer becomes more difficult. PGT-A reduces unnecessary transfers and decreases in the time to achieve a live birth from 14.9 to 7.7 weeks with PGT-A.

PGT-A also can greatly reduce the odds of a patient having multiple pregnancies by choosing a Single Embryo Transfer or SET.

### Without PGT-A



### With PGT-A



Rubio et al: In vitro fertilization with preimplantation genetic diagnosis for aneuploidies in advanced maternal age: a randomized, controlled study. *Fertil Steril.* 2017 May;107(5):1122-1129.

Unfortunately, many patients undergoing IVF cannot get pregnant, even after transferring multiple embryos. A good quality embryo is the best starting point. However, the embryo also needs to be transferred to a uterus that is ready to receive it.

Our recent studies indicate that the endometrium is a key factor for reproductive success.



**ENDOMETRIUM**

The endometrium is the inner lining of the uterus and is where the embryo adheres when it begins its development.

The embryo and endometrium work together in perfect synchrony.

There are components that determine the success of implantation and subsequent pregnancy. But, if the conditions an embryo finds upon arrival are not optimal, not even the most viable embryo will be able to implant.

To achieve a successful pregnancy, the embryo must implant in a receptive endometrium during a period of time, called the “window of implantation”. For any woman undergoing IVF, it’s important to know when that window is.



Previous scientific studies have shown that around **3 in 10 women\*** have an **implantation window that falls** at a different time than expected.

Some windows can be early, some windows can be late, some windows are long, and some are short.

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\* Ruiz et al; 2013. RIF patients

Specialists may not find out that the window could be different for a specific patient until an embryo transfer fails, sometimes more than once.

ERA<sup>®</sup> is a diagnostic tool, developed and patented by Igenomix, that finds the optimal time for embryo transfer.

This increases the chance of the embryo implanting into the uterus and therefore improves the patient's chance of becoming pregnant.

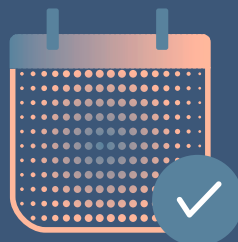
ERA<sup>®</sup> test is indicated for patients with implantation failure of endometrial origin.

Combining Igenomix ERA<sup>®</sup> and PGS (PGT-A) enables you to choose genetically normal embryos to transfer into a genetically optimal uterus.



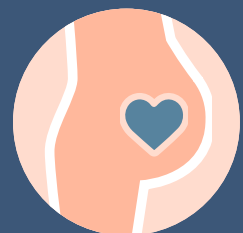
PGT-A

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ERA<sup>®</sup>

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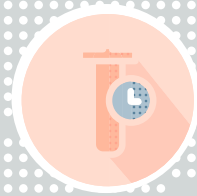
# About Igenomix



Over  
**3500**  
CLINICS



**+500**  
PROFESSIONALS



**20**  
LABS



**+500**  
SCIENTIFIC PUBLICATIONS

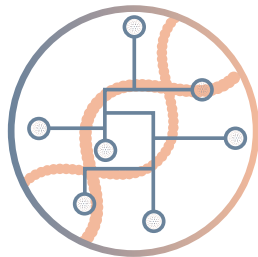
# Genetic testing

Igenomix has developed additional tests that help patients maximize their chances of pregnancy.



## CGT

Helps to determine the risk of having a child with a genetic disease by telling us whether the parents carry one or more recessive genetic mutations.



## PGT-M

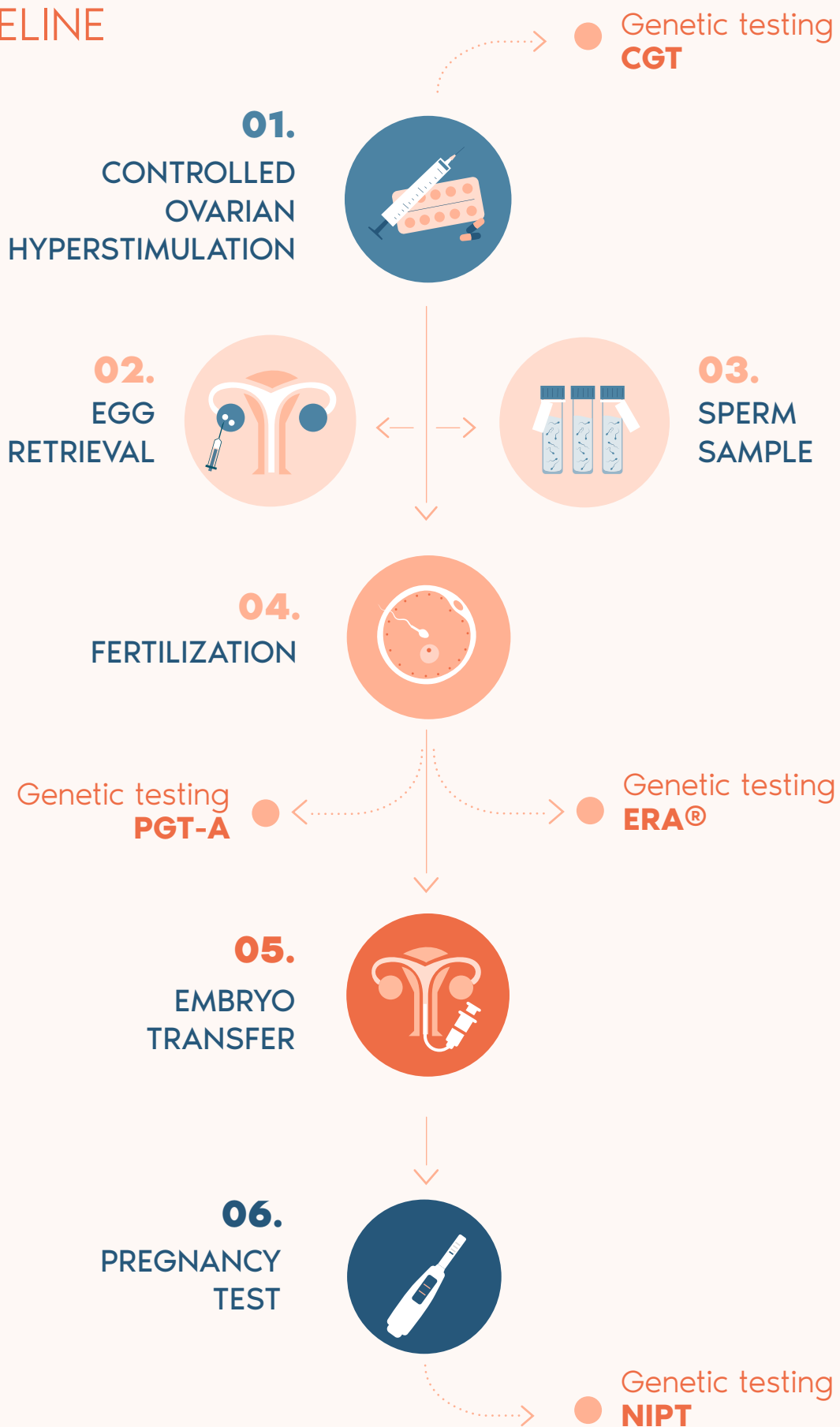
Helps significantly decrease the chance of having a child with an inherited genetic disorder by analyzing embryos before transfer.



## NIPT

A non-invasive prenatal test that analyzes fetal DNA to detect certain anomalies with high precision and reliability.

# IVF TIMELINE



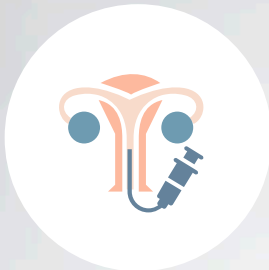


Going through fertility treatment can be emotionally, physically, and financially stressful. It's natural to seek support along the way.

Things don't always go as planned with fertility treatment. Your health care team, including Igenomix, is by your side to ensure the smoothest journey possible to help you realize your dreams of having a baby.

Remember, that the Igenomix genetic counseling team is here to answer your questions.

We invite you to share your concerns and ask all the questions you want, so that you never feel alone.





# Igenomix<sup>®</sup>

PART OF VITROLIFE GROUP<sup>™</sup>

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