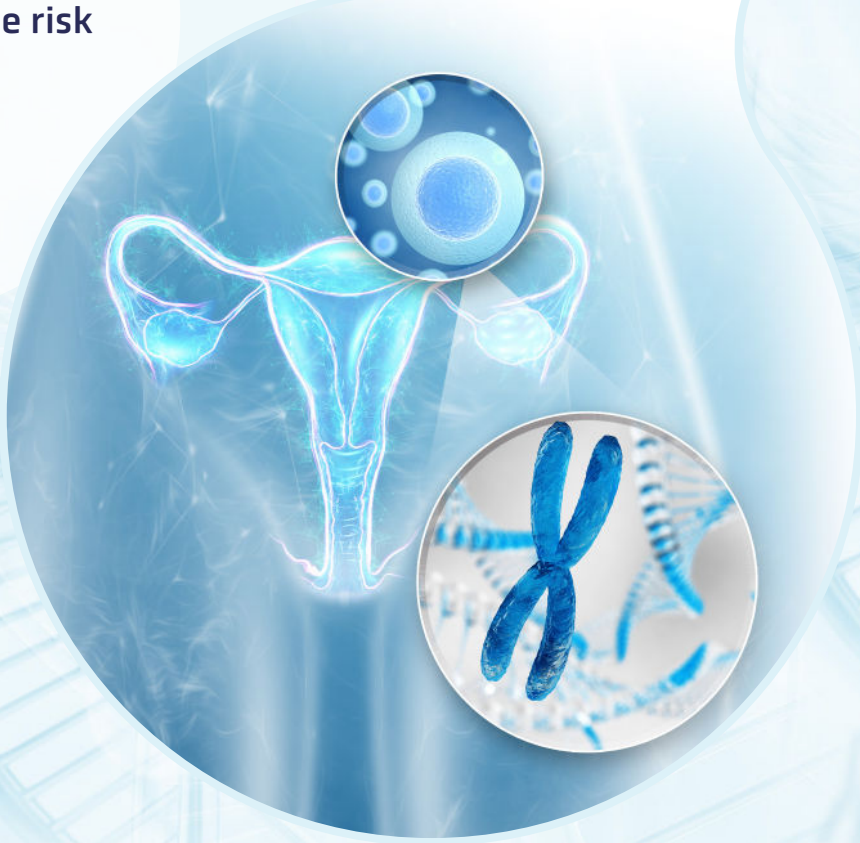
# PGT-A

## Preimplantation Genetic Testing for Aneuploidy

**PGT-A identifies the best embryos for successful transfer, reducing the risk of miscarriage**



PGT-A (Preimplantation Genetic Diagnosis of Aneuploidy) is a procedure that allows the determination of the chromosomal status of embryos from assisted reproduction by analysing the 23 pairs of human chromosomes. Only embryos with the correct number of chromosomes will be able to implant and give birth to a healthy baby. Our PGT-A test uses Next Generation Sequencing (NGS) technology to identify those embryos free of chromosomal abnormalities, increasing the probability of pregnancy by transfer, reducing the risk of miscarriage and allowing the transfer of a single embryo with guaranteed success.

## The process

1. Embryo biopsy at blastocyst stage
2. Introduction of biopsied cells into the PGT-A tube
3. Sample shipment at 4°C
4. Analysis of the DNA of the biopsied cells
5. Results in 10 working days

# Chromosome aneuploidy

Chromosomes are DNA and proteins structures that carry our genetic information. Normal human embryos have 23 pairs of chromosomes. One copy of each chromosome pair is inherited from the mother and the other copy from the father. Abnormalities during early development of the sperm, egg or embryo may lead to an incorrect number of chromosomes in the embryo. These numerical anomalies in chromosome count are called aneuploidies.

Aneuploidy is responsible for the vast majority of first trimester miscarriages and has been shown to be a major cause of infertility and IVF failure[1]. Chromosomal abnormalities can occur in women of all ages, however the chances are greater with increasing maternal age[2]. Most chromosomal abnormalities are incompatible with life, leading to abortions and the rest of them are associated with genetic disorders like Down syndrome (resultant form the presence of an extra copy of chromosome 21).

# PGT-A test description

PGT-A (Preimplantation Genetic Testing for Aneuploidy) also known as PGS (Preimplantation Genetic Screening) is a genetic test that allows the determination of the chromosomal status of IVF embryos by screening all 23 pairs of human chromosomes. PGT-A test is able to identify those embryos free form chromosome abnormalities (euploid embryos) that are more likely to implant and result in a healthy live birth.

By selecting healthy embryos with the right number of chromosomes to be transferred to the uterus, PGT-A:

- Improves IVF success, increasing the likelihood of pregnancy per transfer[3].
- Reduces the risk of miscarriage[4].
- Allows for confident single embryo transfer, reducing the risks and complications associated to multiple pregnancies[5].
- Reduces time to pregnancy by allowing the identification of a normal embryo as soon as possible[6].
- Avoids the live birth of a baby with genetic disorders[7].

# Benefits & value-added

IGLS uses massive sequencing technology to perform PGT-A. The massive sequencing platform analyses thousands of chromosome-specific DNA sequences, enabling accurate identification of gains and losses of up to 10 Mb of individual chromosomes. This test provides accurate answers to patients, ensuring the transfer of a genetically normal embryo and therefore minimising the incidence of miscarriages and birth defects caused by chromosome number irregularities.

# Indications

PGT-A is a helpful technique for the vast majority of couples seeking IVF treatment. All pregnancies are at risk of chromosome abnormality. Nearly 50% of the embryos produced in an IVF cycle are aneuploid[8].

Aneuploidies are a major cause of difficulties achieving pregnancy in couples of all ages. However, as a woman ages, the quality of her eggs decreases and her risk of producing an embryo with chromosome abnormalities increases. This is why a woman's age is critical for pregnancy success.

Embryo screening would improve the chances of achieving a successful pregnancy in all IVF patients. However, it is particularly suitable to help couples with recurrent pregnancy loss, couples with previous IVF failure attempts, women of advanced reproductive age (over 35 y.o.), couples with family history of chromosome problems, couples opting for confident single embryo transfer and good prognosis patients who want to avoid futile future cycles of frozen embryos.

1. Hassold T. & Hunt P. – Nat Rev Genet 2001; 2: 280–291.
2. Fragouli E. et al. – Hum Genet 2013; 132(9): 1001–13.
3. Scott R.T. et al. – Fertil Steril 2013; 100: 697–703.
4. Grifo J.A. et al. – J Assist Reprod Genet 2013; 30(2): 259–264.
5. Yang Z. et al. – Mol Cytogenet 2012; 5: 24.
6. Sermon K. et al. – Mol Hum Reprod 2016; 22(8): 845–57.
7. Fiorentino F. et al. – Hum Reprod 2011; 26(7): 1925–35.
8. Ata B. et al. – Reprod Biomed Online 2012; 24(6): 614–20.

Technical sheet PGT-A - EN - V2 May 2023 - 2/2

igls
Integrated Genetic Laboratory Services
+34 965 118 029 • info@igls.net • www.igls.net