

Fertility Glossary

IVF Laboratory Glossary

Antisperm Antibodies (ASA)

Antibodies to the sperm produced by the man or by his female partner. These antibodies can lead to the destruction of sperm or interfere with fertilization.

Aneuploidy

An embryo that has an inappropriate number of chromosomes due to an error in chromosomal division.

Assisted Hatching (AHA)

A lab technique performed where a small hole is created in the zona pellucida (shell). This opening has been theorized to increase the embryo's ability to attach to the uterine wall.

Azoospermia

The absence of sperm in the ejaculate.

Blastocyst

The stage of embryo development when it is around five days old and made up of about 100+ cells.

Blastomere

A cell that is produced following embryo division.

Blastomere Biopsy

A laboratory procedure performed as a part of preimplantation genetic diagnosis (PGD). This process involves the removal of a cell from the embryo for further genetic testing.

Catheter

A thin flexible hollow tube used in to transfer of sperm or embryos into the uterus.

Chromosome

A DNA unit containing multiple genes. The human cell has 46 chromosomes in 23 pairs. The male and female reproductive cells each contribute 23 chromosomes to create an embryo.

Cytokinesis (cleavage)

Cytoplasmic division after nuclear replication and segregation. Cytokinesis of the embryo, commonly called cleavage, involves a series of mitotic divisions of cytoplasm every 12-18 hours.

Compaction

A process through which a cleaving embryo changes from a collection of individual cells into a solid mass with tight intercellular junctions. It is usually seen on Day 4 after fertilization.

Conception

Implantation of an embryo into the uterine lining. This is confirmed by a positive pregnancy test.

Cryopreservation

The process of freezing and storing embryos or sperm for use in future IVF cycles.

Cumulus

A multilayer of follicular cells surrounding the oocyte. These cells are important for nurturing the oocyte during growth.

Cytoplasm

The living substance of a cell surrounding the nucleus.

Embryo

A fertilized egg that has begun cell division.

Embryo Culture

The manufactured liquid medium used to maintain the physiological demands of a growing embryo in vitro.

Embryo Donation

The donation of remaining cryopreserved embryos to another infertile couple. This is typically an anonymous donation.

Embryo Grading

A number given when determining blastomere size and shape. This value is determined by observing the embryo in its growth and development.

Embryo Transfer

The process in which a catheter is used to pick up an embryo(s) and then inserted through the cervix into the uterus where the catheter is then emptied.

Fertilization

The union of a sperm and an egg (gametes).

Fluorescent in-situ Hybridization (FISH)

Procedure performed to determine specific chromosome numbers using fluorescent signals. This process is used in preimplantation genetic diagnosis (PGD). It is usually performed on a single cell.

Fragmentation

Cytoplasmic blebs or pieces with no nucleus that are seen in an embryo. Fragments may be caused by suboptimal culture conditions or a chromosome imbalance. The more fragmentation seen the less likely the embryo is to implant.

Gametes

A spermatozoon (sperm) or oocyte (egg).

Genes

The amino acids which make up a chromosome.

Genetics

The study of heredity.

Germinal Vesicle (GV)

An oocyte that has not yet matured and does not have the ability to be fertilized.

Implantation

The process by which the embryo attaches to the wall of the uterus.

In Vitro Fertilization (IVF)

The process of assisted reproduction where a woman's oocytes are removed and then combined with her partner's sperm in a laboratory petri dish. Eventually, these embryos are returned to her uterus after fertilization and cell division has occurred.

Insemination

The laboratory procedure that involves placing the sperm into the media droplet containing the oocyte.

Intracytoplasmic Sperm Injection (ICSI)

A procedure performed in IVF laboratories where in which a spermatozoon is injected into an oocyte to assist the fertilization process. This procedure can be used in treatment of cases of low sperm counts, history of poor fertilization, and/or diminished egg quality.

Meiosis

The cell division that occurs in reproductive cells (egg and sperm) during fertilization. This process allows for the transfer of genetic material from each parent.

Metaphase I Oocyte (MI)

An oocyte that is characterized by the absence of both a GV and polar body with chromosomes. It is an immature oocyte that does not yet have the ability to be fertilized.

Metaphase II Oocyte (MII)

An oocyte with chromosomes that is characterized by the presence of a polar body. It is a mature oocyte with the ability to be fertilized.

Micromanipulation

Manipulation of an oocyte/embryo under a high power microscope, such as assisted hatching, ICSI, and/or blastomere biopsy.

Morphology

The evaluation process performed on sperm, oocytes, and embryos where the technologist uses a high- powered microscope to objectively evaluate the shape and physical characteristics of each cell.

Morula

The embryo stage typically observed between 72-96 hours after insemination. It is the stage between a 16-cell embryo and a blastocyst.

Motility

Test performed as part of a semen analysis to see what percentage of the sperm present in the ejaculate are moving. Linearity (how straight the sperm are moving) and velocity (how fast the sperm are moving), are also noted when testing the motility.

Multinucleation

Some blastomeres show multiple nuclei rather than the normal single nucleus. Implantation and pregnancy rates decrease with increasing proportion of embryos with multinucleated cells. The selection of such embryos for transfer is avoided.

Nucleus

A differentiated central mass enclosed in a membrane inside the cytoplasm of a cell. It contains the essential DNA essential for the growth and reproduction of the cell.

Oocyte

The female gamete or reproductive cell, also called an egg, which contains the maternal genetic material.

Oocyte Retrieval

The procedure performed by the physician to aspirate and collect eggs from the patient's stimulated ovaries.

Polar Body

A round structure extruded from the oocytes' cytoplasm when it reaches maturity. Chromosomes are divided evenly between the cytoplasm and polar body, each containing 23 chromatids. (See MII)

Preimplantation Genetic Diagnosis (PGD)

A micromanipulation technique where one or two blastomeres are removed from the embryo and analyzed (see FISH) for gender and/or genetic diseases. Once the cell(s) is tested and determined to be from a normal embryo, the embryo can then be transferred to the uterus. Typically, the embryo transferred will be at the blastocyst stage of development.

Pronuclei

Structures formed during fertilization. In normal fertilization there will be two pronuclei, one from the sperm and one from the oocyte genetic material.

Semen

The sperm and glandular fluid that comes out of the urethra when a man ejaculates.

Semen Analysis

The examination of a male's semen for the number of sperm, motility (movement), and shape.

Spermatozoon

The mature male reproductive cell (gamete) commonly referred to as a sperm, which contains the paternal genetic material.

Testicular Biopsy or Testicular Sperm Aspiration (TESA)

A procedure performed by the physician on men with azoospermia (no sperm in the ejaculate). The testicular tissue or spermatozoon from the testes is collected and analyzed. If cells are present they can then be used in the ICSI procedure.

Vacuoles

Abnormal inclusions that can be seen as part of oocyte or embryo morphology. They appear as small, round, clear spaces in the cytoplasm of the cell as a by-product of cell division.

Zona Pellucida

The shell like protein covering that surrounds the embryo. The embryo completes a process called "hatching" where it breaks free of the "shell" and proceeds to implant into the wall of the uterus. A patient cannot become pregnant if the embryo does not hatch out of the zona. In some cases, the embryo needs assistance in this process. (See assisted hatching)

Zygote

A fertilized oocyte in the very early stages, before cytoplasmic cleavage begins.