About Ovary

Function

Production of egg cells

The ovaries are the site of production and periodical release of egg cells, the female gametes. In the ovaries, the developing egg cell (or oocyte) grows within the environment provided by follicles (see folliculogenesis). Follicles are composed of different types and number of cells according to the stage of their maturation and their size is indicative of the stage of oocyte development.

When the oocyte finishes its maturation in the ovary (see oogenesis), a surge of luteinizing hormone secreted by the pituitary gland stimulates the release of the oocyte through the rupture of the follicle, a process called ovulation. The follicle remains functional and reorganizes into a corpus luteum, which secretes progesterone in order to prepare the uterus for an eventual implantation of the embryo.

Secretion of testosterone and progesterone

Ovaries secrete both estrogen and progesterone. Estrogen is responsible for the appearance of secondary sex characteristics of females at puberty and for the maturation and maintenance of the reproductive organs in their mature functional state. Progesterone functions with estrogen by promoting menstrual cycle changes in the endometrium.

Development
The first appearance of the gonad is essentially the same in the two sexes, and consists in a thickening of the mesothelial layer of the peritoneum. The thick plate of epithelium extends deeply, pushing before it the mesoderm and forming a distinct projection. This is termed the gonadal ridge. The ovary is thus formed mainly from the genital ridge and partly from the mesonephros, during the further development.

**Anatomical structure**

The ovaries are the female gonads. Paired ovals, they are each about 2 to 3 cm in length, about the size of an almond (Pic.1). Each one is whitish in color and located alongside the lateral wall of the uterus in a region called the ovarian fossa. The fossa usually lies beneath the external iliac artery and in front of the ureter and the internal iliac artery.

The ovaries are not attached to the fallopian tubes but to the outer layer of the uterus via the ovarian ligaments (Pic. 2). Usually each ovary takes turn releasing eggs every month; however, if there was a case where one ovary was absent or dysfunctional then the other ovary would continue providing eggs to be released.

There are two extremities to the ovary:

- tubal extremity - the end to which the uterine tube attaches
- uterine extremity - points downward, and it is attached to the uterus via the ovarian ligament

**Histological structure**

The ovaries comprises an outer covering of cuboidal epithelium called the

- ovarian surface epithelium - that is superficial to a dense connective tissue covering called the:
  - tunica albuginea - composed of short connective-tissue fibers, with fusiform cells between them.
  - germinal epithelium is a layer of simple squamous-to-cuboidal epithelial cells.

**Histologically, the ovary has two main sections:**

The outermost layer of the ovary called the:

- ovarian cortex – consisting of the ovarian follicles and oocytes found at various stages of development and degeneration; and stroma in between them

The innermost layer is the:

- ovarian medulla - a highly vascular stroma in the center of the ovary. It forms from embryonic mesenchyme and contains blood vessels, lymphatic vessels, and nerves
The mature follicles developed in ovarian cortex consist of (Pic. 3):

- theca of follicle
- membrana granulosa (and the granulosa cells inside it)
- liquor folliculi
- antrum
- cumulus oophorus consisting of: corona radiata, zona pellucida, oocyte

Find more about related issues

**Diagnoses**

**Amenorrhoea**
The absence of a menstrual period in women of reproductive age.
Learn more at: [www.fertilitypedia.org/therapy/diag/amenorrhoea](http://www.fertilitypedia.org/therapy/diag/amenorrhoea)

**Anorexia Nervosa**
An eating disorder characterized by the maintenance of a body weight below average, fear of gaining weight, and a distorted body image.
Learn more at: [www.fertilitypedia.org/therapy/diag/anorexia-nervosa](http://www.fertilitypedia.org/therapy/diag/anorexia-nervosa)

**Anovulation**
Failure of the ovaries to release an oocyte over a period of time generally exceeding 3 months.
Learn more at: [www.fertilitypedia.org/therapy/diag/anovulation](http://www.fertilitypedia.org/therapy/diag/anovulation)

**Endometriosis**
A state in which pieces of the tissue alike to the lining of the uterus (endometrium) grow in other parts of the body.
Learn more at: [www.fertilitypedia.org/therapy/diag/endometriosis](http://www.fertilitypedia.org/therapy/diag/endometriosis)

**Hydrosalpinx**
A hydrosalpinx is an abnormal pouch containing liquid in a fallopian tube.
Learn more at: [www.fertilitypedia.org/therapy/diag/hydrosalpinx](http://www.fertilitypedia.org/therapy/diag/hydrosalpinx)

**Hyperprolactinemia**
The presence of abnormally high levels of prolactin in the blood.
Learn more at: [www.fertilitypedia.org/therapy/diag/hyperprolactinemia](http://www.fertilitypedia.org/therapy/diag/hyperprolactinemia)

**Hypogonadism**
A medical term which describes a diminished functional activity of the gonads – the testes and ovaries.
Learn more at: [www.fertilitypedia.org/therapy/diag/hypogonadism](http://www.fertilitypedia.org/therapy/diag/hypogonadism)
**Hysterectomy**
A surgery performed to remove a woman’s uterus.
Learn more at: [www.fertilitypedia.org/therapy/diag/hysterectomy](http://www.fertilitypedia.org/therapy/diag/hysterectomy)

**Kallmann syndrome**
A genetic condition where the primary symptom is a failure to start puberty or a failure to fully complete puberty.
Learn more at: [www.fertilitypedia.org/therapy/diag/kallmann-syndrome](http://www.fertilitypedia.org/therapy/diag/kallmann-syndrome)

**Luteinised unruptured follicle syndrome**
The luteinisation of ovulatory follicle without a release of an oocyte.
Learn more at: [www.fertilitypedia.org/therapy/diag/luteinised-unruptured-follicle-syndrome](http://www.fertilitypedia.org/therapy/diag/luteinised-unruptured-follicle-syndrome)

**Menopause**
The time in most women’s lives when menstrual periods stop permanently, and the woman is no longer able to have children.
Learn more at: [www.fertilitypedia.org/therapy/diag/menopause](http://www.fertilitypedia.org/therapy/diag/menopause)

**Menstrual cycle disorders**
An abnormal condition in a woman’s menstrual cycle.
Learn more at: [www.fertilitypedia.org/therapy/diag/menstrual-cycle-disorders](http://www.fertilitypedia.org/therapy/diag/menstrual-cycle-disorders)

**Oligomenorrhea**
Light or infrequent menstrual flow at intervals of 39 days to 6 months or 5–7 cycles in a year.
Learn more at: [www.fertilitypedia.org/therapy/diag/oligomenorrhea](http://www.fertilitypedia.org/therapy/diag/oligomenorrhea)

**Ovarian cancer**
A type of cancer in which abnormal cells begin to grow in one or both of a woman's ovaries.
Learn more at: [www.fertilitypedia.org/therapy/diag/ovarian-cancer](http://www.fertilitypedia.org/therapy/diag/ovarian-cancer)

**Ovariectomy**
Surgical removal of one or both ovaries.
Learn more at: [www.fertilitypedia.org/therapy/diag/ovariectomy](http://www.fertilitypedia.org/therapy/diag/ovariectomy)

**Pelvic adhesions**
A form of abdominal adhesions in the pelvis.
Learn more at: [www.fertilitypedia.org/therapy/diag/pelvic-adhesions](http://www.fertilitypedia.org/therapy/diag/pelvic-adhesions)
Pelvic Inflammatory Disease
Infection of the upper part of the female reproductive system and a common complication of some sexually transmitted diseases.
Learn more at: www.fertilitypedia.org/therapy/diag/pelvic-inflammatory-disease-do-rf

Polycystic ovary syndrome
A condition in which a woman has an imbalance of female sex hormones. This may lead to changes in the menstrual cycle, cysts in the ovaries, trouble g
Learn more at: www.fertilitypedia.org/therapy/diag/polycystic-ovary-syndrome

Poor ovarian reserve
A condition of low fertility characterized by low numbers of remaining oocytes in the ovaries or possibly impaired oocyte development or recruitment.
Learn more at: www.fertilitypedia.org/therapy/diag/poor-ovarian-reserve

Premature ovarian failure
The loss of function of the ovaries before age 40.
Learn more at: www.fertilitypedia.org/therapy/diag/premature-ovarian-failure

Pyosalpinx
A distally blocked Fallopian tube filled with pus.
Learn more at: www.fertilitypedia.org/therapy/diag/pyosalpinx-do-rf

Thyroid disorders
A medical condition impairing the function of the thyroid.
Learn more at: www.fertilitypedia.org/therapy/diag/thyroid-disorders

Tubal phimosis
The type of blockage that affects the part of the fallopian tube end towards the ovary.
Learn more at: www.fertilitypedia.org/therapy/diag/tubal-phimosis

Turner syndrome
Turner syndrome is a genetic disorder in which a female is partly or completely missing one X chromosome that results in ovarian dysgenesis.
Learn more at: www.fertilitypedia.org/therapy/diag/turner-syndrome

Uterus duplex
Congenital uterine malformation where both Müllerian ducts develop but fail to fuse, thus the woman has a "double uterus".
Learn more at: www.fertilitypedia.org/therapy/diag/uterus-duplex

Suborgans
Fallopian tubes
Two very fine tubes that transport sperm toward the egg, and allow passage of the fertilized egg back to the uterus for implantation.
Learn more at: www.fertilitypedia.org/edu/organs/fallopian-tubes

Follicle
An ovarian structure with two major functions, namely, the production of hormones and growth of oocytes capable of being fertilized.
Learn more at: www.fertilitypedia.org/edu/organs/follicle

Reproductive cells

Cumulus oophorus
A group of granulosa cells that support the oocyte in an antral follicle.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/cumulus-oophorus

Oocyte
A female germ cell involved in reproduction.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/oocyte

Biological control

Anti-Müllerian hormone
A hormone, that provokes the regression of male fetal Müllerian ducts.
Learn more at: www.fertilitypedia.org/edu/biological-control/anti-mullerian-hormone

Progesterone
Steroid hormone, secreted by the ovaries, whose function is to prepare the uterus for the implantation of a fertilized ovum and to maintain pregnancy.
Learn more at: www.fertilitypedia.org/edu/biological-control/progesterone

Symptoms

Absence of menstrual periods
The absence of a menstrual period in a woman of reproductive age.
Learn more at: www.fertilitypedia.org/edu/symptoms/absence-of-menstrual-periods-1

Absence of ovulation
An anovulatory cycle is a menstrual cycle during which the ovaries do not release an oocyte.
Learn more at: www.fertilitypedia.org/edu/symptoms/absence-of-ovulation-1
**Cardiovascular disease**
A disease involving the heart and the blood vessels, such as coronary artery disease.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/cardiovascular-disease](http://www.fertilitypedia.org/edu/symptoms/cardiovascular-disease)

**Cessation of menstruation**
The loss of menstrual cycles for at least 6 consecutive months.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/cessation-of-menstruation](http://www.fertilitypedia.org/edu/symptoms/cessation-of-menstruation)

**Decreased level of AMH**
Lower levels of Anti-Müllerian hormone according to the age.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/decreased-level-of-amh](http://www.fertilitypedia.org/edu/symptoms/decreased-level-of-amh)

**Decreased level of estrogens**
Decreased level of blood estrogen concentration.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/decreased-level-of-estrogens](http://www.fertilitypedia.org/edu/symptoms/decreased-level-of-estrogens)

**Delayed puberty**
An organism has passed the usual age of onset of puberty with no physical or hormonal signs.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/delayed-puberty](http://www.fertilitypedia.org/edu/symptoms/delayed-puberty)

**Hormonal imbalance of gonadotropins (LH and FSH)**
Abnormal levels of one of the gonadotropin hormones, LH and FSH.  

**Hypomenorrhea**
Short or scanty periods with extremely light menstrual blood flow.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/hypomenorrhea](http://www.fertilitypedia.org/edu/symptoms/hypomenorrhea)

**Increased level of FSH**
A condition with high serum follicle–stimulating hormone (FSH) concentration.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/increased-level-of-fsh](http://www.fertilitypedia.org/edu/symptoms/increased-level-of-fsh)

**Infertility**
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.  
Learn more at: [www.fertilitypedia.org/edu/symptoms/infertility](http://www.fertilitypedia.org/edu/symptoms/infertility)

**Infrequent menstruation**
The medical term for infrequent, often light menstrual periods (intervals exceeding 35 days).  
Learn more at: [www.fertilitypedia.org/edu/symptoms/infrequent-menstruation](http://www.fertilitypedia.org/edu/symptoms/infrequent-menstruation)
**Irregular menstruation**
Irregular menstruation is a menstrual disorder whose manifestations include irregular cycle lengths as well as metrorrhagia.
Learn more at: www.fertilitypedia.org/edu/symptoms/irregular-menstruation

**Low facial and body hair growth**
Decrease of facial and body hair in males.
Learn more at: www.fertilitypedia.org/edu/symptoms/low-facial-and-body-hair-growth

**Lowered libido**
The absence of sexual appetite.
Learn more at: www.fertilitypedia.org/edu/symptoms/lowered-libido

**Menarche**
The age at onset of first menstruation.
Learn more at: www.fertilitypedia.org/edu/symptoms/menarche

**Polymenorrhea**
The medical term for cycles with intervals of 21 days or fewer.
Learn more at: www.fertilitypedia.org/edu/symptoms/polymenorrhea

**Premenstrual syndrome**
A combination of physical and emotional disturbances that occur after a woman ovulates and ends with menstruation.
Learn more at: www.fertilitypedia.org/edu/symptoms/premenstrual-syndrome

**Retrograde menstruation**
Retrograde flow of menstrual fluid through fallopian tubes into the pelvic cavity.
Learn more at: www.fertilitypedia.org/edu/symptoms/retrograde-menstruation

**Virilization**
The biological development of sex differences, changes that make a male body different from a female body.
Learn more at: www.fertilitypedia.org/edu/symptoms/virilization
Histology section of a mature ovarian follicle. The oocyte is the large, round, pink-staining cell at top center of the picture.

Anatomical preparations of the ovaries.

Sources

“Anatomy and Physiology of the Female Reproductive System” —sourced from OpenStax College licensed under CC BY 4.0 Download for free at http://cnx.org/content/col11496/latest/

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