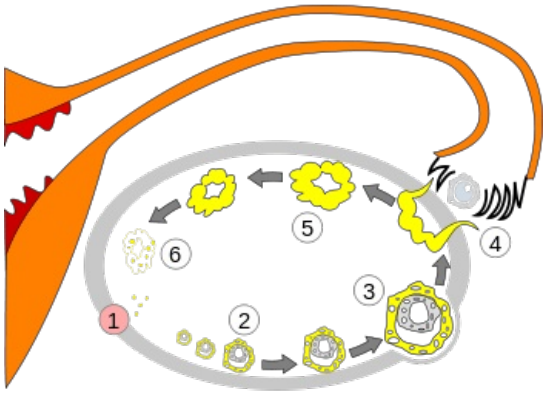
Ovarian cycle

The length of ovarian cycles is most often **28 days** (but varies between 24-36 days). In the ovary are follicles that contain oocytes . The number of follicles changes during a woman's life - the most of them are found in the fetus in the 5th-6th trimester. month, there are only 1-2 million at birth and approximately 500,000 at menarche. At the beginning of the cycle, several follicles begin to enlarge, a cavity forms around the oocyte, but only one begins to grow faster. Around the 6th day, a **dominant follicle** emerges , the other follicles undergo regressive changes – **atretic follicles** emerge . Follicular cells produce estrogens , after ovulation the **corpus luteum** is formed, which also produces progesterone. These events affect LH and FSH . LH activates the production of androgens in the **thecal cells** and FSH conditions the conversion of androgens into estrogens in the granulosa cells.



Changes in the ovary during the cycle: **1)** menstruation **2)** maturing follicle **3)** mature follicle **4)** ovulation **5)** corpus luteum **6)** disappearance of corpus luteum

Phases of the ovarian cycle

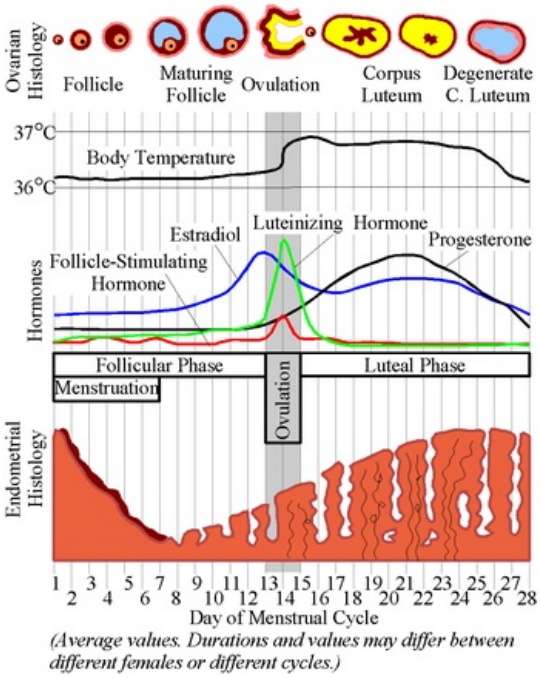
1st phase - follicular - lasts 12-14 days from the first day of the last menstrual cycle, follicular cells during this period produce sex hormones - estrogens and a small amount of progesterone. One of the follicles grows faster and matures into a Graafian follicle (1–1.5 cm), arching above the surface of the ovary.

2nd phase – ovulatory – the Graafian follicle bursts and the egg is released (floats into the abdominal cavity → ovulation) where it is captured by the fringes of the fallopian tube.

3rd phase – luteal – after being washed out of the Graafian follicle, a corpus luteum is formed, which mainly produces progesterone. If fertilization does not occur, the corpus luteum shrinks into a white corpuscle around the 24th day and disappears. A small scar remains on the surface of the ovary. The target tissue of estrogen and progesterone is not only the mucous membrane of the cervix, but also the cervix, vagina and mammary glands , it affects bone tissue , they interfere with the control of the thyroid gland and body temperature .

Follicular development

- **primordial follicle** – the smallest and most numerous, there is one layer of flat follicular cells around the oocyte
- **primary follicle** – maturation is probably initiated by estrogens
  - unilaminar – is formed by a primary oocyte and one layer of follicular cells of cubic shape
  - multilaminar – it is formed by a primary oocyte and several layers of follicular cells, the zona pellucida and theca interna become noticeable
- **secondary (vesicular) follicle** – FSH stimulates the growth of granulosa cells, LH of thecal cells, produces estrogens, thereby stimulating the growth of the oocyte
- **tertiary follicle**
  - estrogens and FSH increase the FSH and LH receptors in the cells - this **increases the production of estrogens** , which, however, suppresses the central production of FSH, on the contrary, the level of LH is increased
  - the rising LH increases the production of androgens and thus **stops the growth of the oocyte** and causes **atresia of the follicle**
  - the FSH/LH ratio in the follicle decides whether the follicle will die or not
  - it is not entirely clear how the one that does not attract is chosen



(Average values. Durations and values may differ between different females or different cycles.)

- **Graafian (mature) follicle** – towards the end of the follicular phase, there is a high level of estrogen, it is so high that, on the contrary, it starts to support the production of FSH and LH
  - FSH causes an increase in the receptors for LH in the granulosa cells - this is then important in the luteal phase, as LH supports the production of progesterone, which is already formed a little in the Graafian follicle
  - progesterone activates various enzymes that **trigger ovulation** (cycle day 14)
- **the ruptured follicle is filled with blood (corpus haemorrhagicum)**, the thecal and granulosa cells proliferate and the **corpus luteum** is formed - the main source of progesterone and estrogens in the luteal

phase
- if fertilization does not occur, 4 days before menstruation, the body undergoes **autolytic processes** , turning into a corpus albicans (fibrosum)
- if fertilized, a corpus luteum gravidatis is formed, which is maintained until the 4th-5th month of pregnancy under the influence of human chorionic gonadotropin
- in the luteal phase, progesterone rises (even though LH falls) - this is due to the number of LH receptors in the cells
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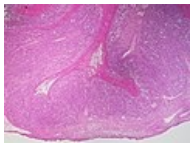
Individual stages of follicle development



Corpus luteum

Links

related articles

- Ovary
- Menstrual cycle
- FSH
- LH
- Progestogens
- Estrogens

References

- BENEŠ, Jiří. *Study materials* [online]. [feeling. 2009]. < http://jirben.wz.cz (http://jirben.wz.cz/) >.