

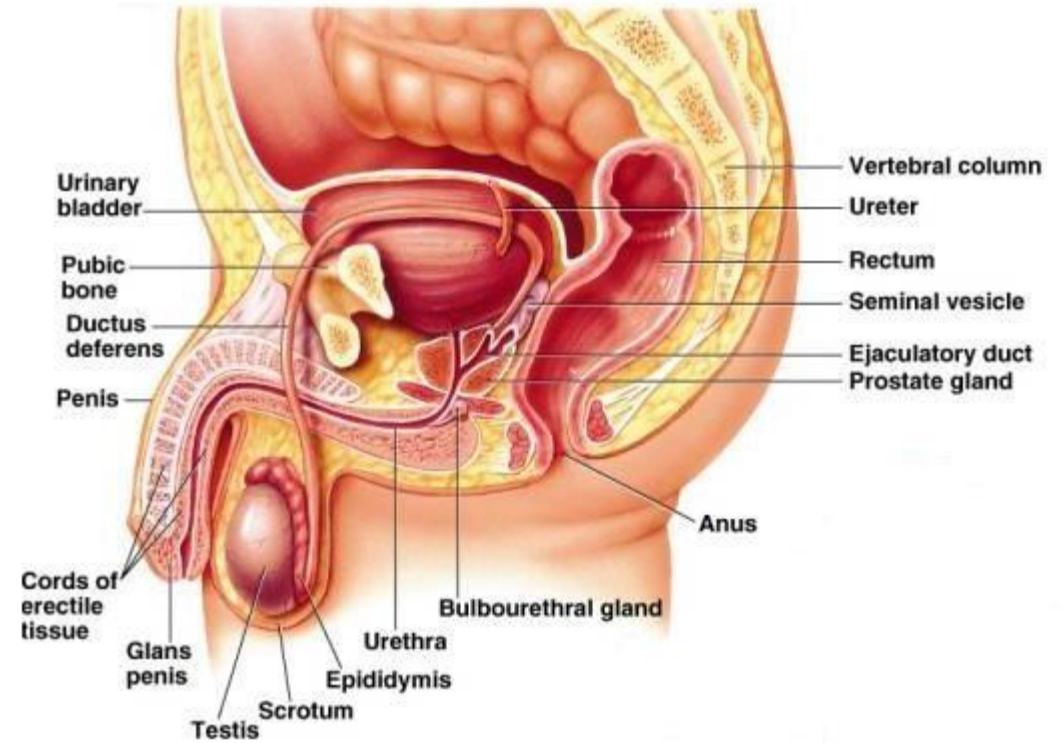
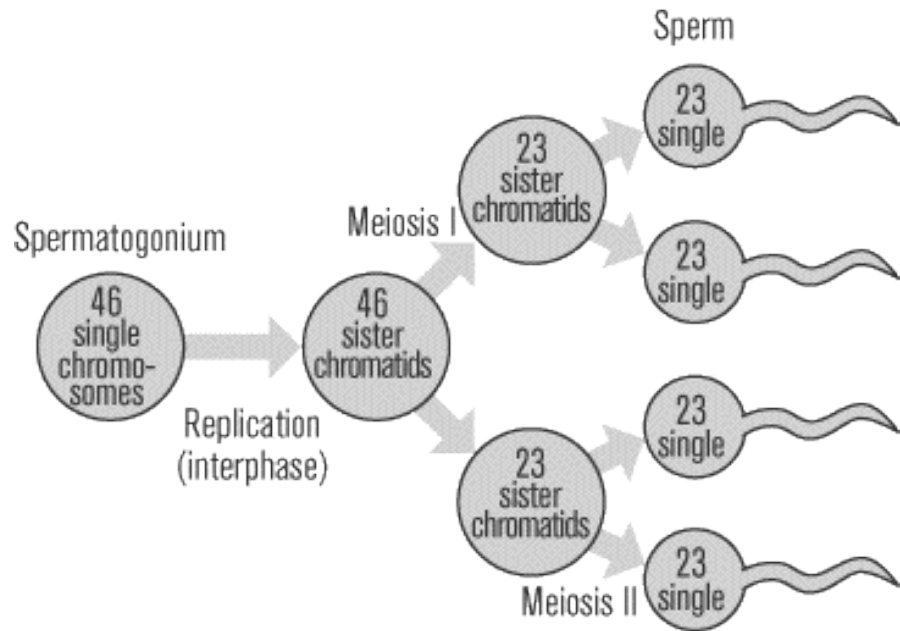
9.4 Hormonal Regulation of the Reproductive System

SBI4UP

MRS. FRANKLIN

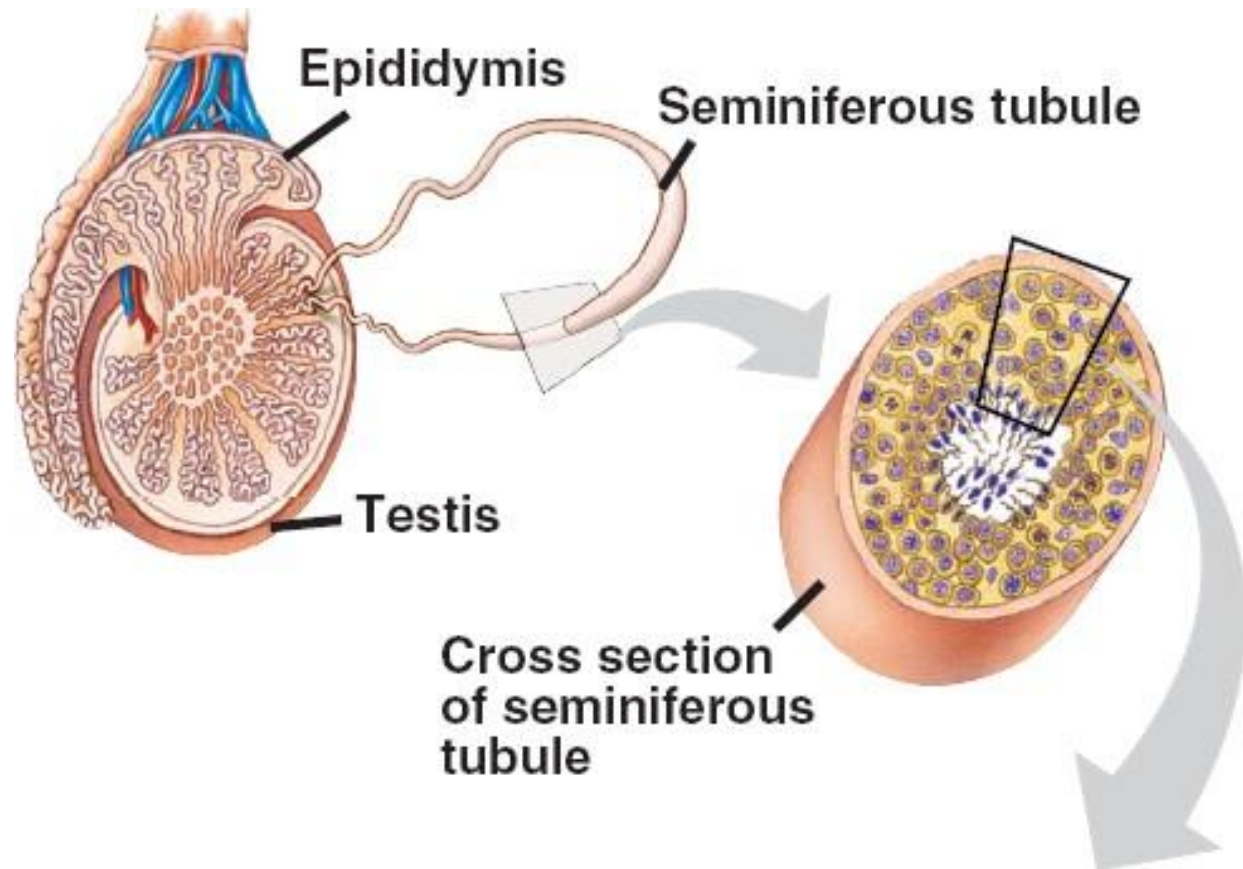
Male Reproductive System & Spermatogenesis

The male reproductive system includes various organs that help to produce and store sperm cells so that they can be used in the process of reproduction.



Spermatogenesis occurs in the male testes

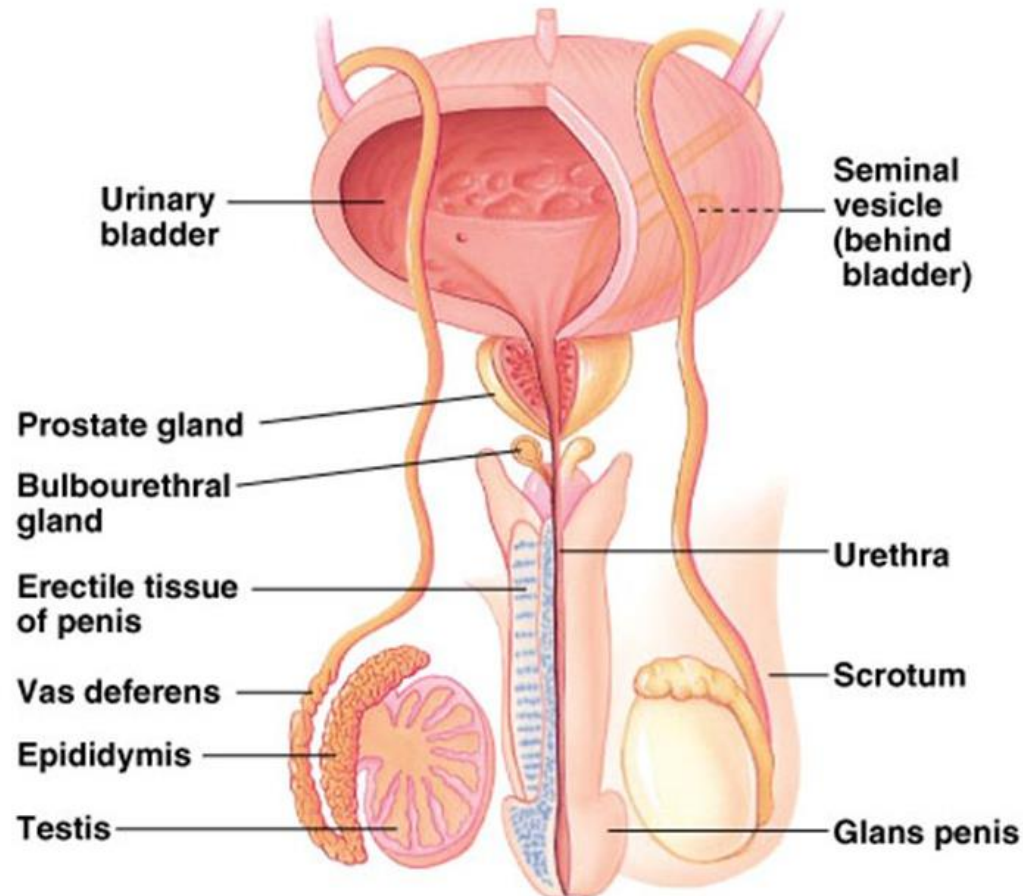
Male Reproductive System & Spermatogenesis



Sperm are produced in the seminiferous tubules and the interstitial cells help to secrete the hormone 'testosterone'.

The sperm travel through the epididymis to the ductus deference so that it can be released through the ejaculatory duct.

Male Reproductive System & Spermatogenesis

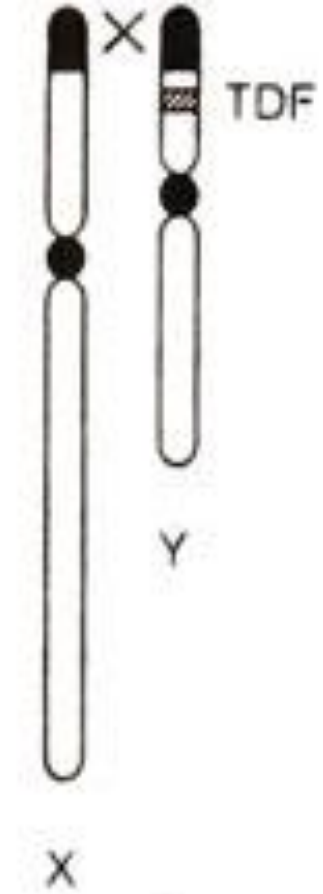
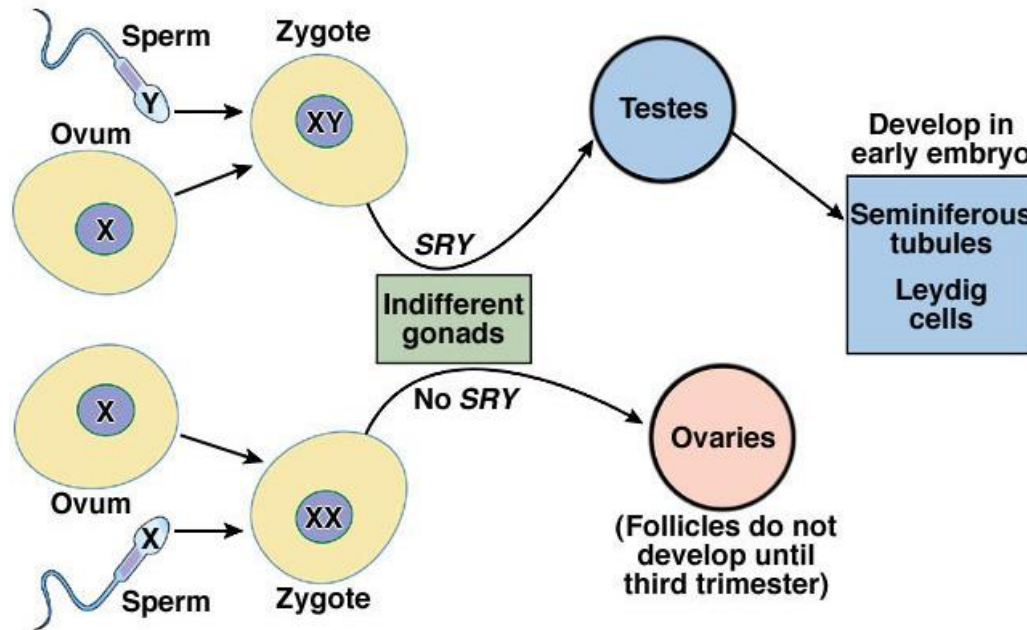


When the sperm passes through the ductus deferens it is mixed with fluids released from the Cowper's gland and the prostate gland. This helps to produce semen.

** Both the autonomic and somatic nervous system enable the movement of the semen through the ejaculatory duct*

Sex Hormones

The Y chromosome of the male contains a *testis-determining factor (TDF)* that produces male *sex hormones (i.e. androgens)* involved in the development of the male reproductive organs.



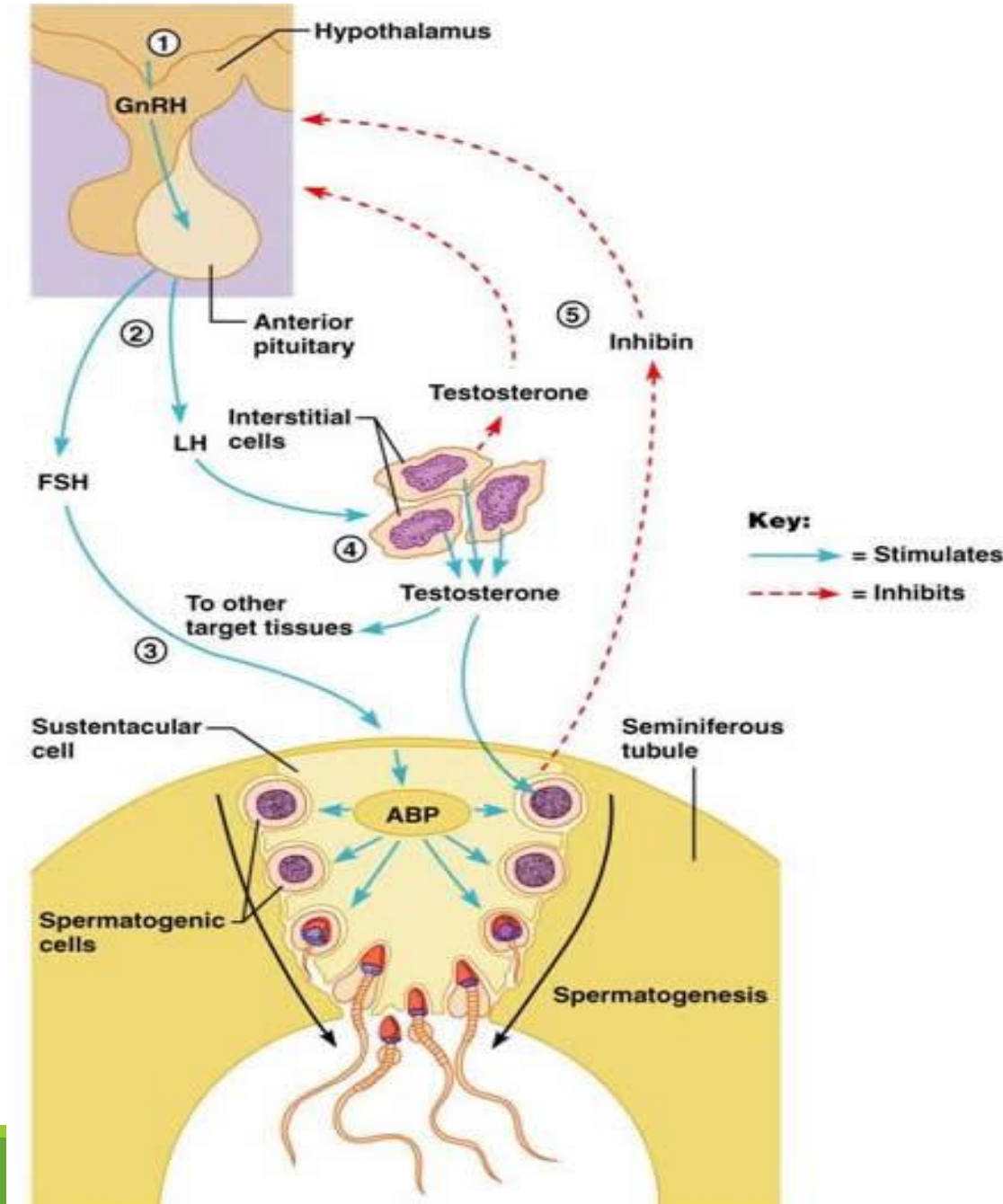
Maturation of Male Reproductive System

The male reproductive system only develops fully during puberty (10 – 13 years of age). The hormones released during this time enables the development of sex organs and secondary sex characteristics.

Hypothalamus hormones - *gonadotropin releasing hormone (GnRH)* triggers the anterior pituitary gland to release the following hormones:

1) follicle – stimulating hormone (FSH)

2) Luteinizing hormone (LH)



Maturation of Male Reproductive System

Both FSH and LH help in the production of Testosterone and sperm.

A negative feedback system occurs when there is a large production of FSH.

Inhibin and testosterone are released and act as inhibitors to the anterior pituitary gland. This maintains a constant sperm production and hormone level.

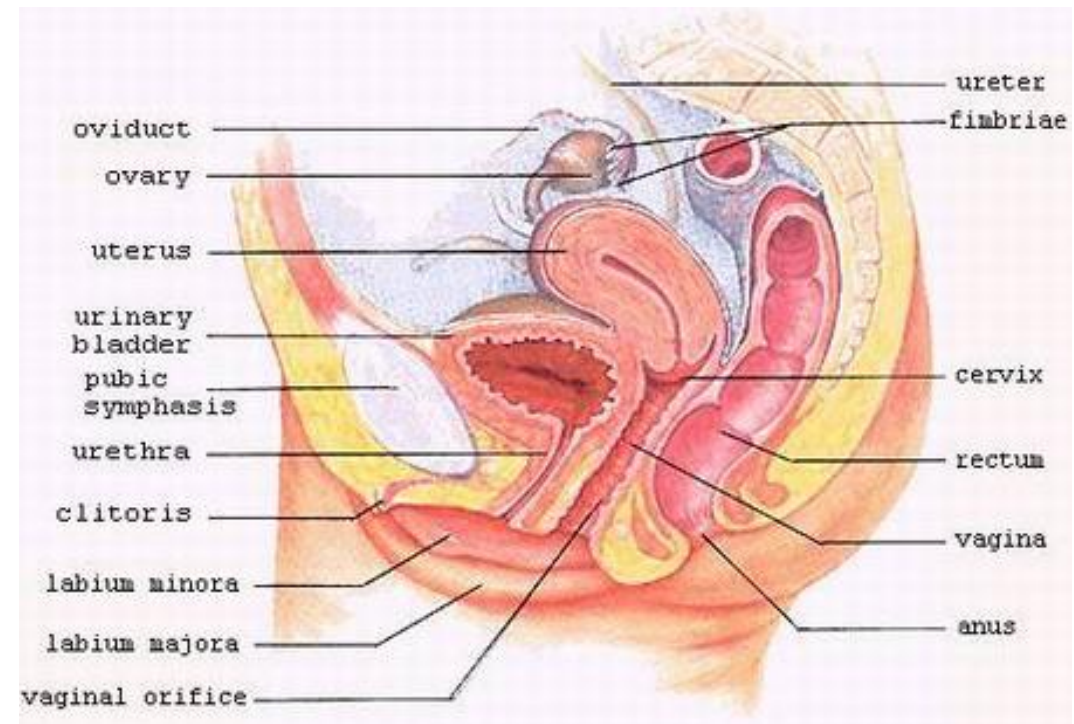
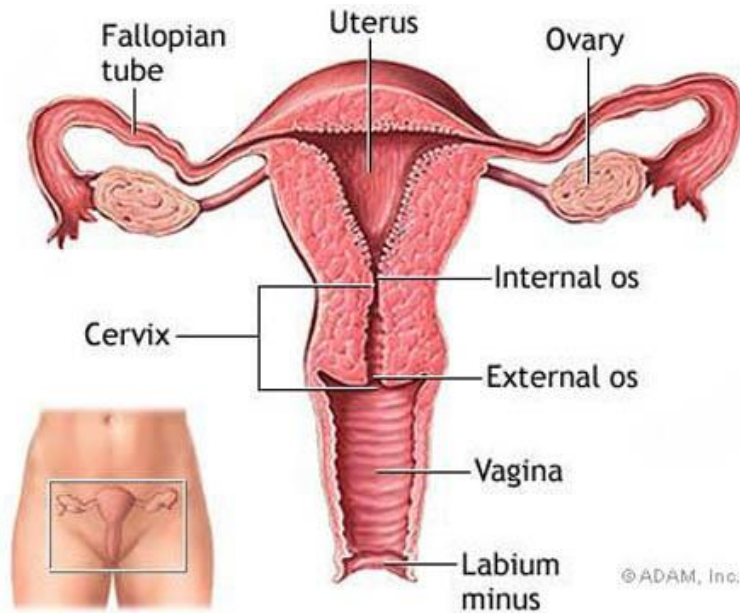
Aging in the Male Reproductive System

Most men if in good health could remain fertile throughout their entire life. But at times there may be a decline in fertility at the age of 40 due to a change in hormone level.

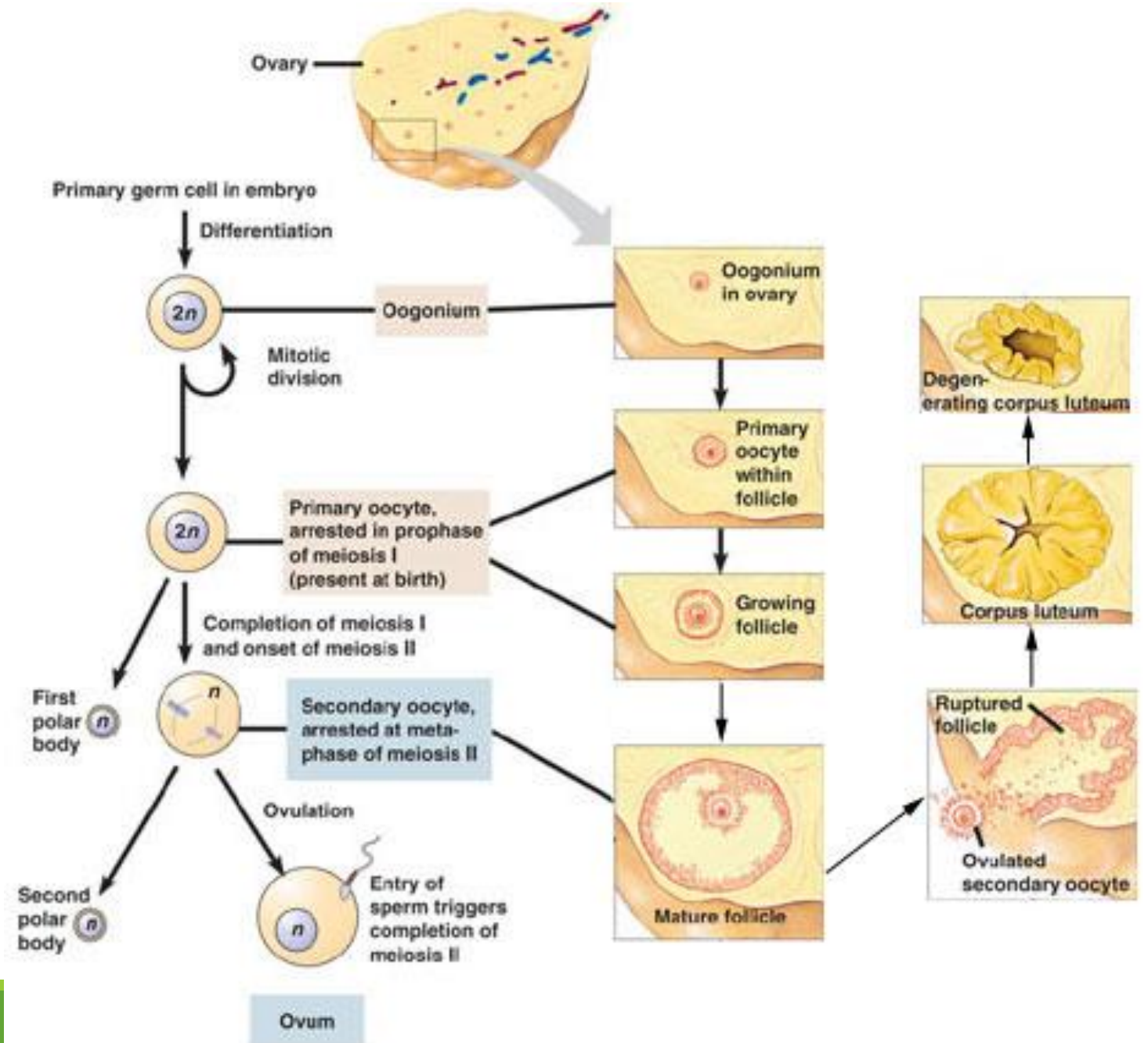
Andropause:

Female Reproductive System

A limited number of gametes are produced in the ovaries of the female reproductive system. The female reproductive system will create an ideal environment for fertilization and development of the zygote.



Remember . . . Oogenesis

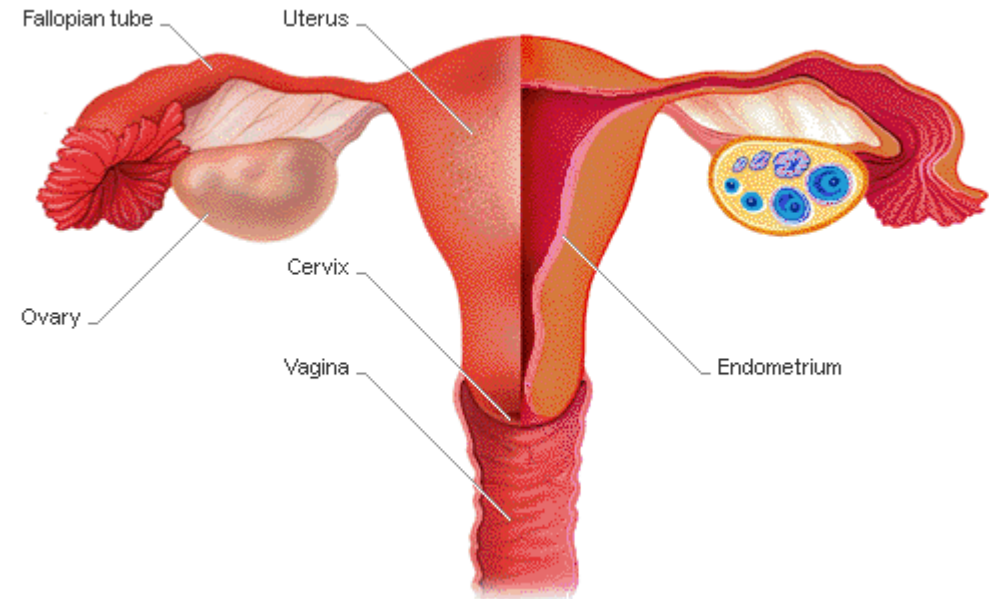


Female Reproductive System

There are two ovaries in the reproductive system and each alternates in production of an egg every month.

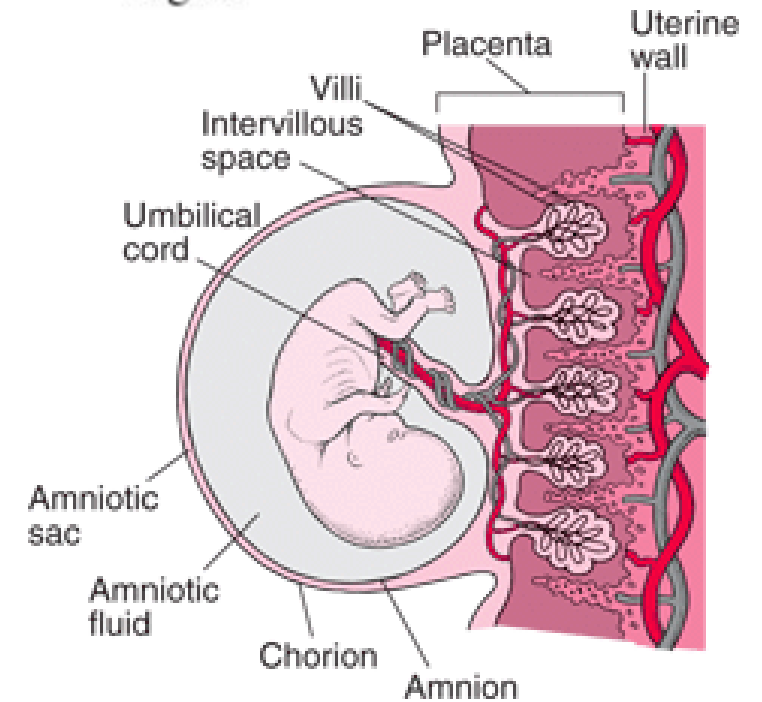
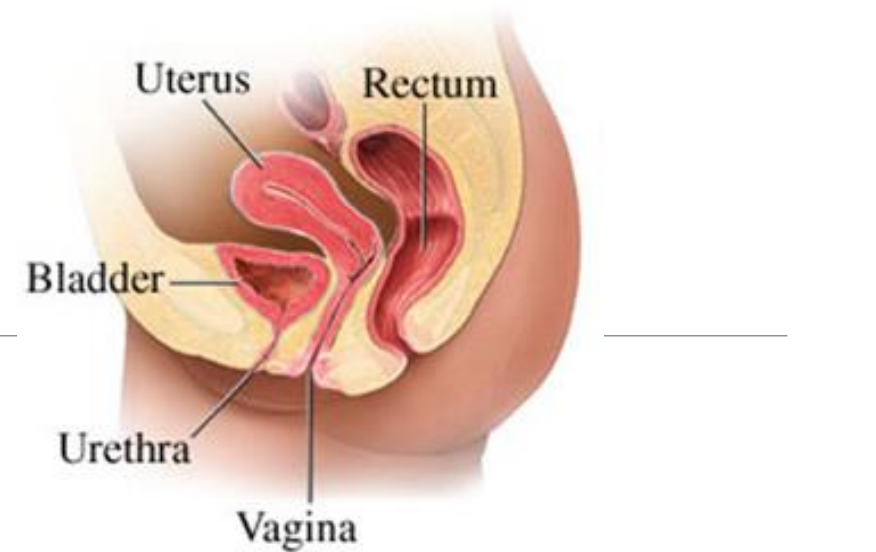
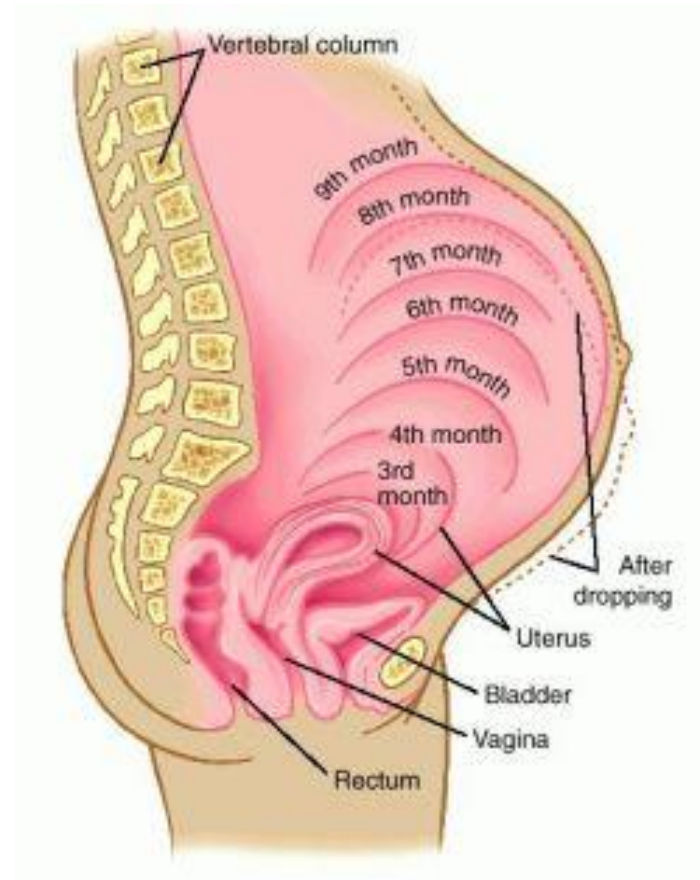
Ovulation:

Oviduct:



Female Reproductive System

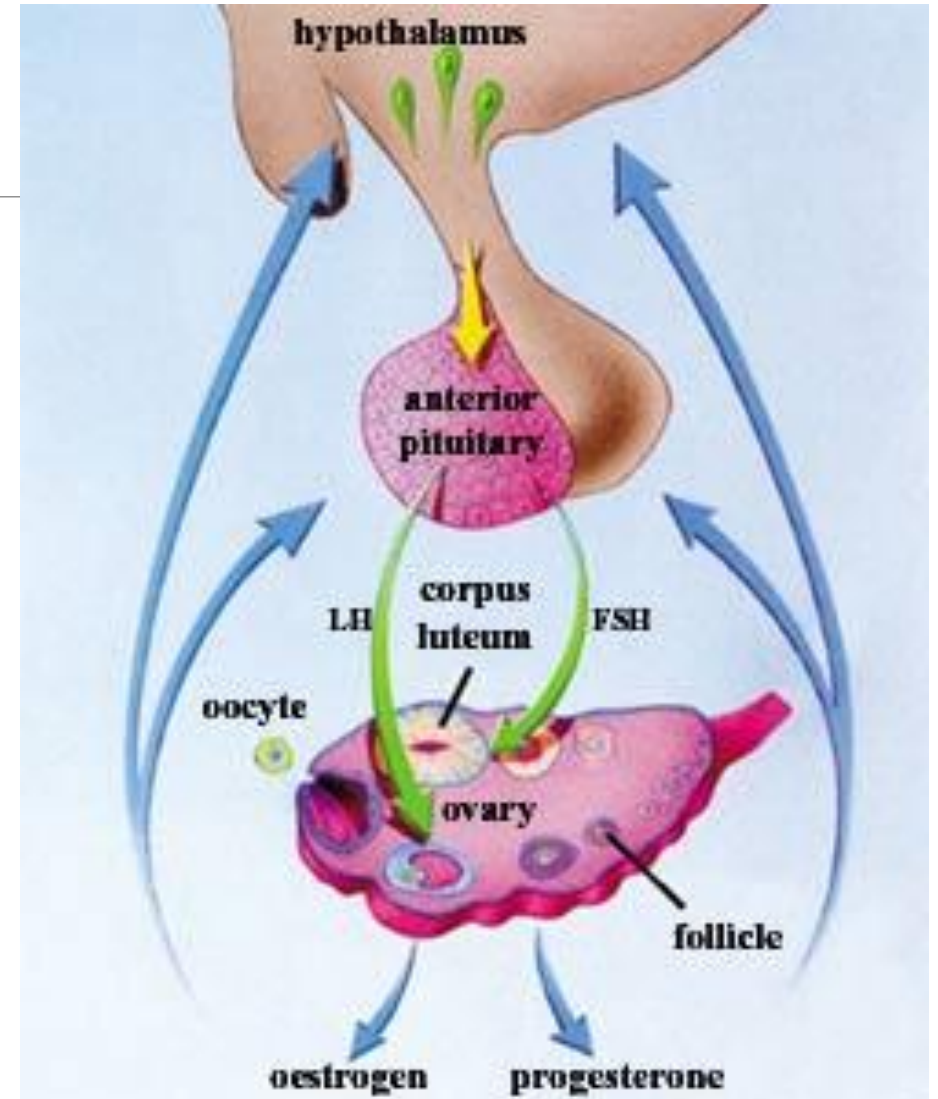
Uterus:



Female Reproductive System

The female reproductive system forms during fetal development but is incomplete until puberty. At the age of 9-13, the hypothalamus begins to release **GnRH hormone** to the anterior pituitary gland.

FSH and LH are also released from the ant. Pituitary gland in females which is in turn involved in the release of **oestrogen** and **progesterone**.



Menstrual Cycle

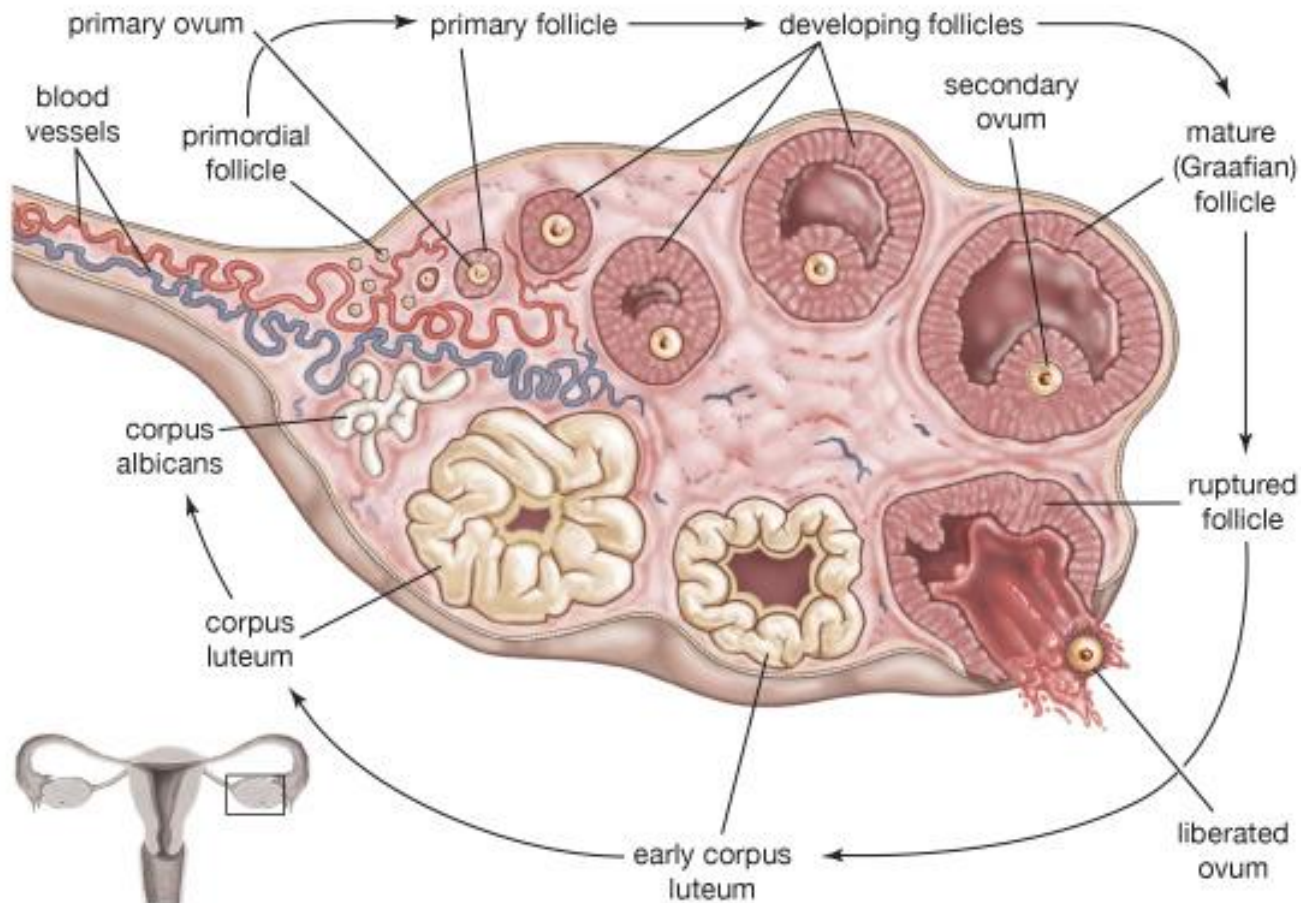
During the menstrual cycle (20 -45 days), the hormones stimulate the development of the uterine lining and the egg is released from the ovary.

If the egg (ovum) is not fertilized after 24 hours of being released from the ovary, fertilization can no longer occur. When the egg isn't fertilized, the uterine lining is shed and the cycle will begin again.

Ovarian cycle:

Uterine cycle:

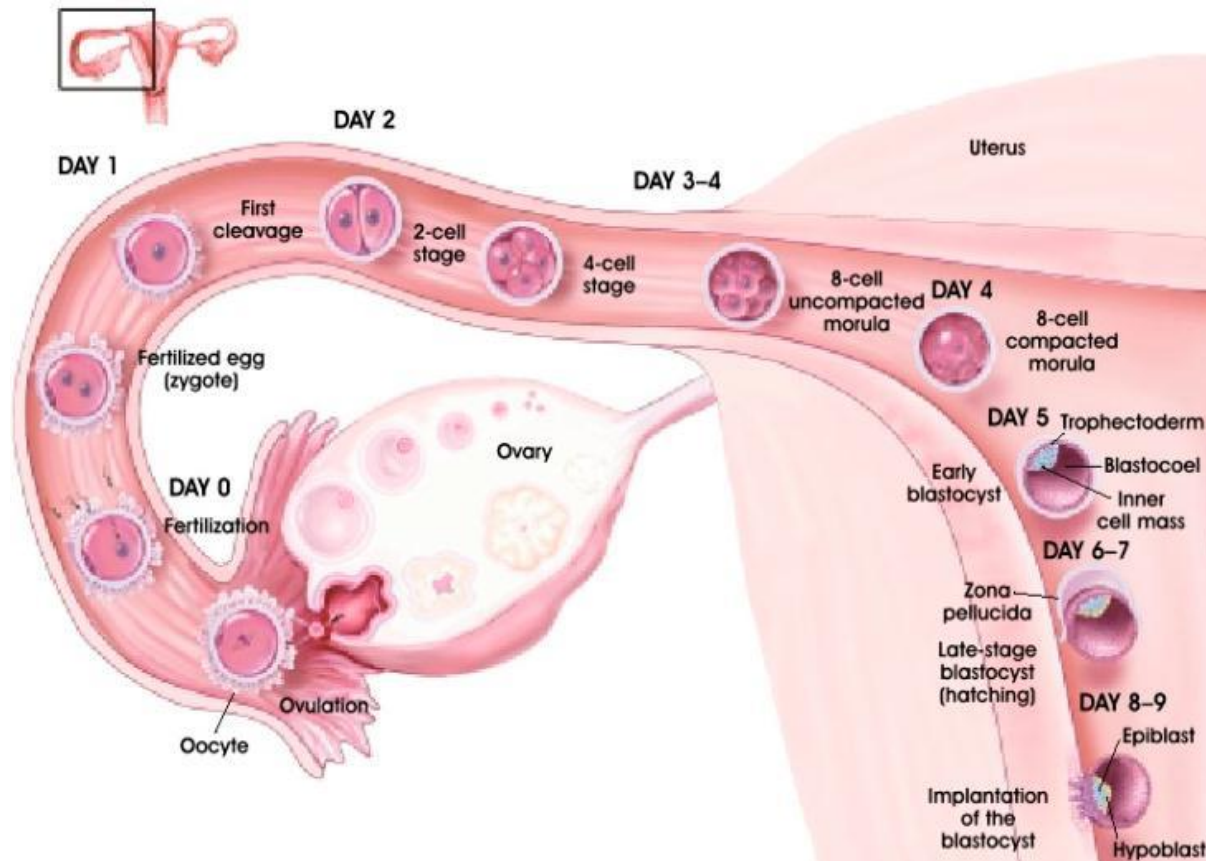
Menstrual Cycle



The ovary contains approximately 400 000 follicles at puberty.

Only 400 follicles will develop into a mature ovum and be released.

Release of Ovum and Fertilization

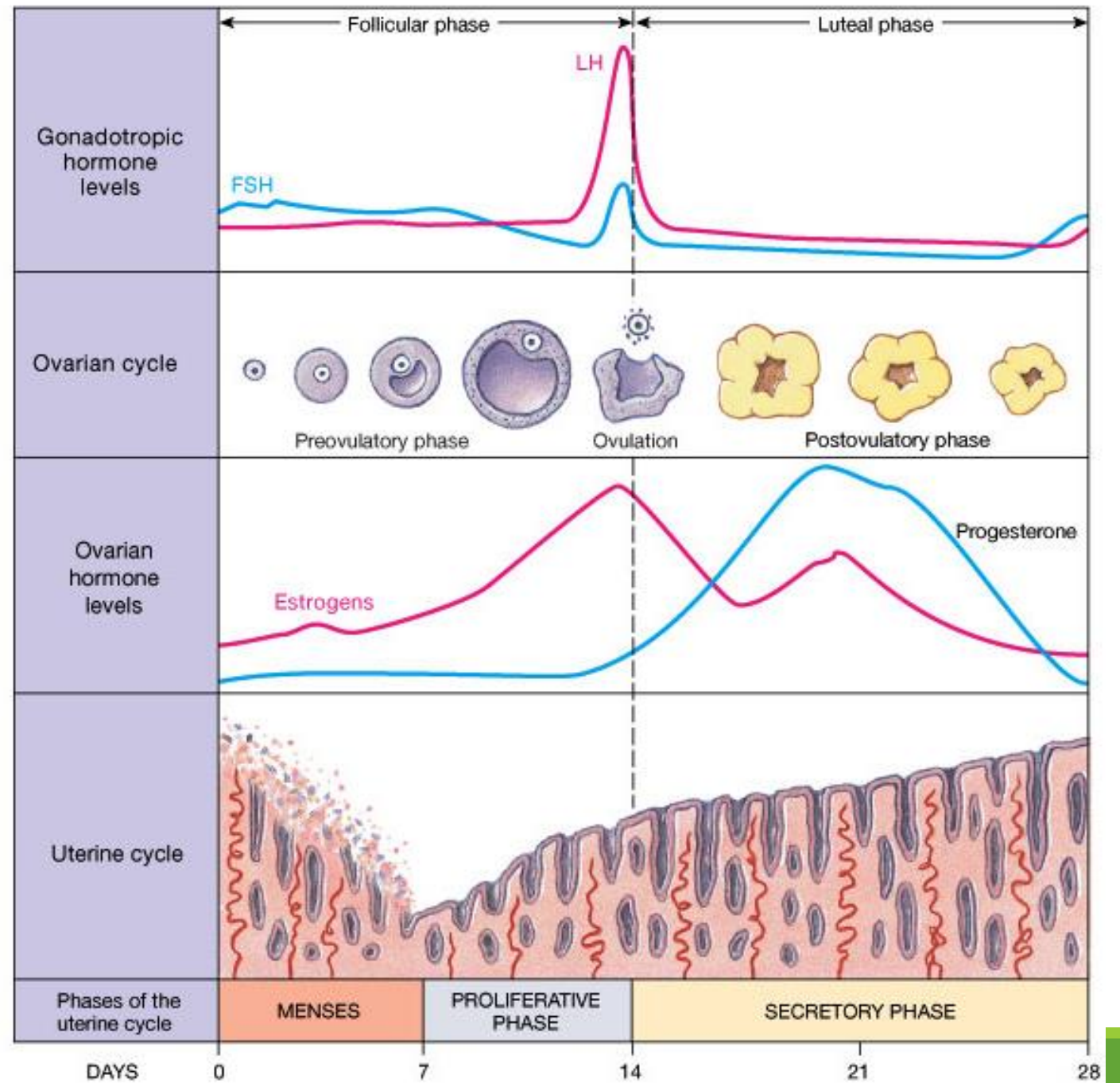


The ovum is fertilized in the fallopian tube, and the embryo will travel to the uterus whereby it will implant on the uterine wall.

The ovarian cycle is divided into two phases:

1) Follicular phase:

2) Luteal Phase:



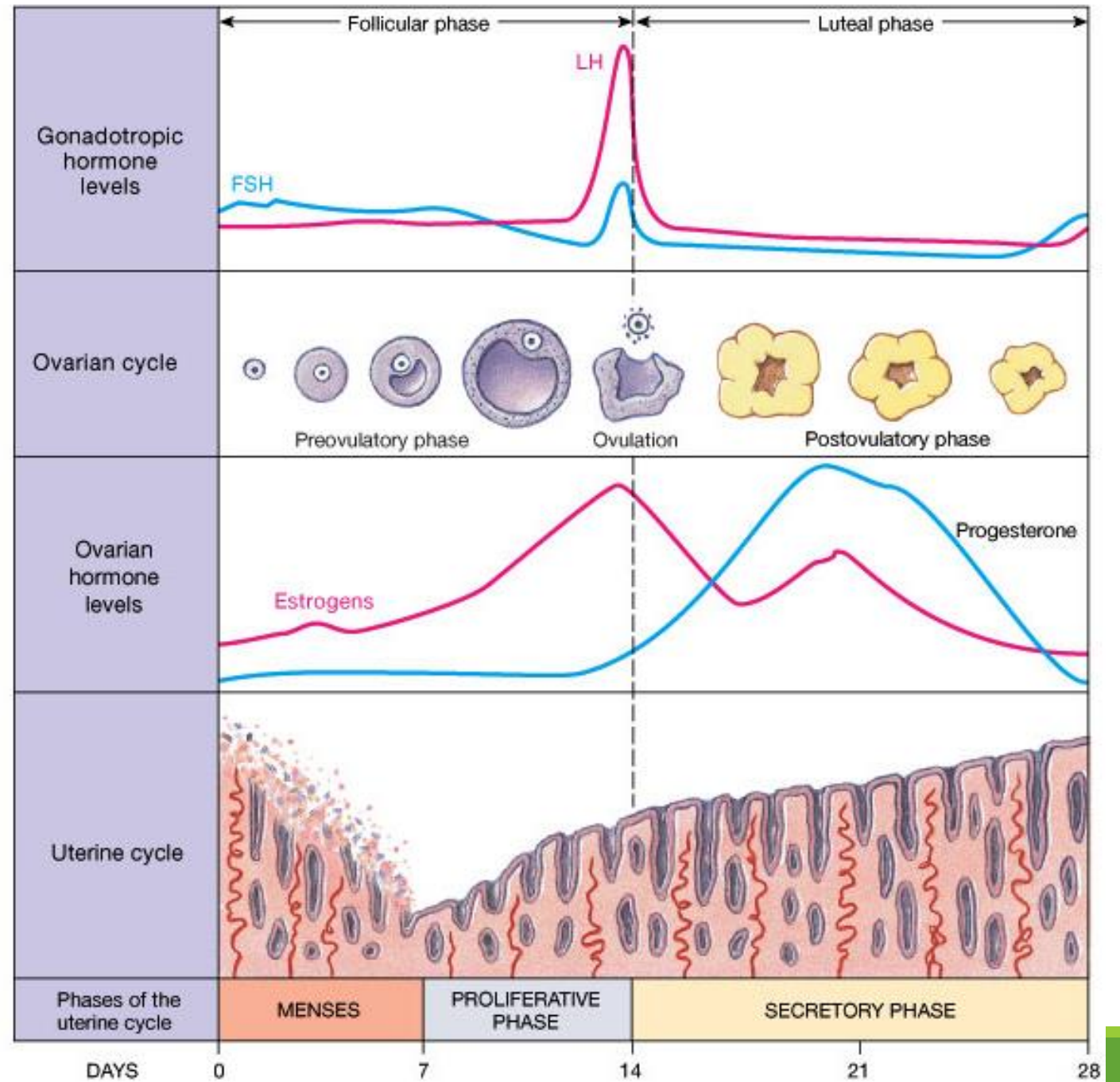
The uterine cycle ensures that the uterus is prepared for implantation of the embryo.

Begins on the first day of the menstrual cycle.

Day 0 -7:

Day 7 – 14:

Day 14-28:



Homework

Textbook: pg. 425 # 4, 5, 6, 7 & 9