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Female Reproductive System

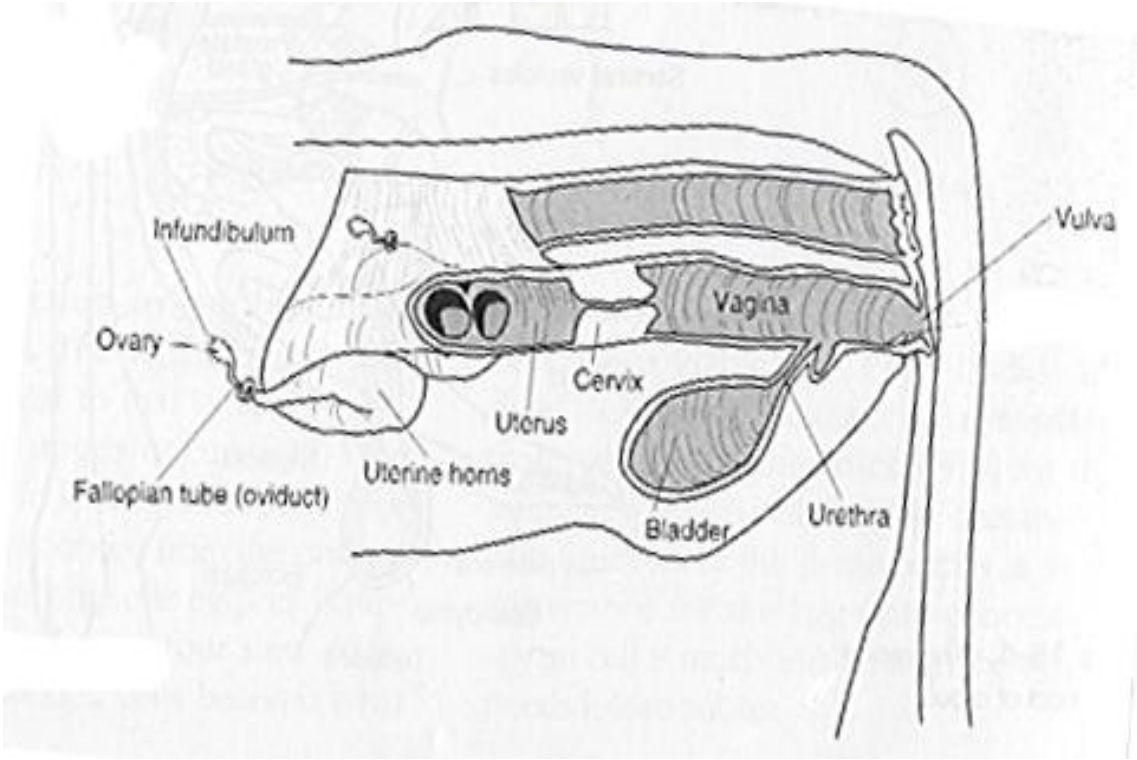
- The ***estrous*** cycle: process of ***oogenesis***
- Period from beginning of one heat period to the next
- Produces the ovum (egg) and places the ovum in the proper place
- This causes the female to accept the male for mating (called ***estrus*** or ***heat***), and ensures that the ovum remains in place throughout ***gestation***

Length of Estrous (Heat) Cycles

- Cattle: 21 days
- Pig: 21 days
- Sheep: 17 days
- Horse: 21 days

There are several organs that contribute to the estrous cycle.

- ***Ovaries*** – two small organs that produce ***ova*** or ***eggs***
- This is where oogenesis takes place
- ***Estrogen*** and ***progesterone*** are also produced here
- These are two hormones that play important roles in both estrous and estrus
- ***Fallopian tubes*** (***oviduct***) – transport the egg (ovum) from the ovaries to the uterus.
- It is within the fallopian tubes that the egg is fertilized by the sperm and ***conception*** takes place.
- ***Infundibulum*** – a funnel-shaped structure on the end of the fallopian tube that collects the ova during ovulation.
- ***Uterus*** (***womb***) – muscular organ that serves as a chamber in which the fertilized ovum (zygote) develops into an ***embryo***, then into a ***fetus***, and finally expels the newborn.
- ***Cervix*** – thick group of circular-shaped muscles that seal the uterus to prevent foreign material from entering.
- When the animal comes into estrus, the cervix opens to allow passage of the sperm into the uterus.
- The cervix opens into the ***vagina***, where semen is deposited during mating.
- When the fetus has matured, the vagina serves as the ***birth canal***.
- The opening to the reproductive tract is the ***vulva***.
- The **vulva** prevents foreign material from entering the reproductive and urinary tracts.



Production of the Ovum

- ✓ The female reproductive cycle (estrous) is controlled by hormones, that are produced by the ***endocrine system***.
- ✓ The reproductive cycle of the female begins with a hormone that is secreted by the ***pituitary gland*** and stimulates the ovary to produce a blister like structure called a ***follicle.***
- ✓ ***This hormone is called the follicle-stimulating hormone (FSH).***
- ✓ The follicle secretes estrogen, that stimulates the rest of the reproductive system to prepare for the reception of the ovum.
- ✓ It is in the follicle where ***oogenesis*** takes place.
- ✓ When the ovum is matured, the follicle becomes soft and expels the ovum into the fallopian tube.
- ✓ In species that have more than one young, the follicles release several ova instead of one.
- ✓ This process is called ***ovulation***.
- ✓ As ovulation occurs, estrogen produced by the follicle causes the animal to go into estrus (heat).
- ✓ The expulsion of the ovum from the follicle leaves a rupture that is filled with yellow cells that develop into the ***corpus luteum*** (***CL***).
- ✓ The development of the ***corpus luteum*** (***CL***) is caused by a hormone known as the ***luteinizing hormone*** (***LH***).

- ✓ If conception does not occur, the corpus luteum recedes, the ovary returns to normal, and the cycle is begun again.

✓ The corpus luteum secretes ***progesterone***, that causes the uterus to thicken in preparation for receiving the fertilized ovum.

✓ After conception, the corpus luteum continues to produce progesterone, which prevents the production of new ovum.

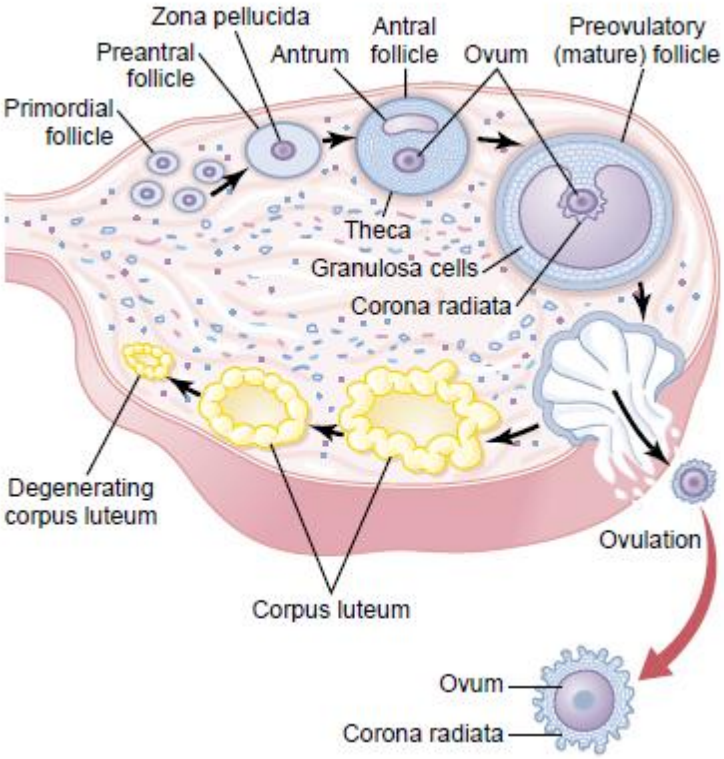


Fig. Stage of follicular growth in the ovary, also formation of the corpus luteum

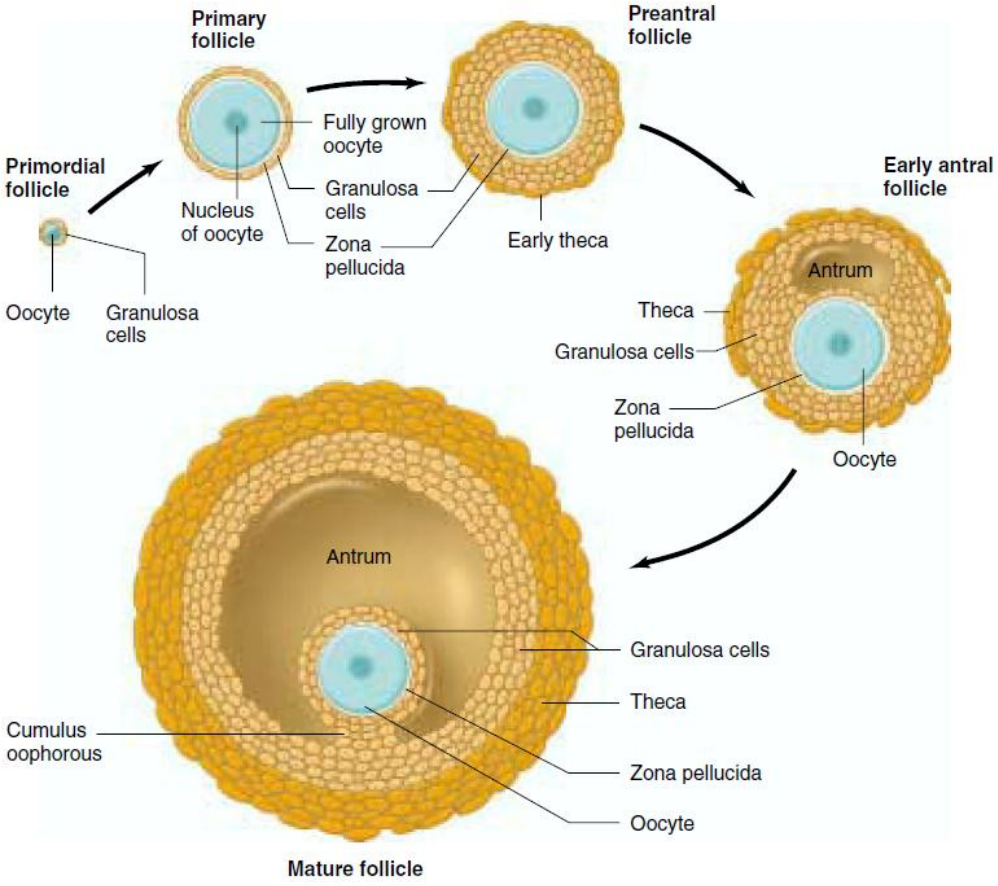


Fig. Development of oocyte and ovarian follicle

Hormones

☒ ***Estrogen:*** produced by the follicle in non pregnant female and placenta in late pregnancy

-induces estrus - heat

-develops duct system of mammary gland

☒ ***Progesterone:*** hormone that keeps female out of heat

- relaxes uterus

☒ ***FSH:*** Follicle Stimulating Hormone

- Promotes development of follicles on ovary
- Indirectly responsible for estrogen production

☒ ***LH:*** Lutenizing Hormone

- Causes ovulation
- Develops and maintains corpus luteum**.**

HCG

☒ Human Chorionic Gonadotropin

- Produced by the placenta of pregnant women early in pregnancy
- Used on cows that are cystic - won't ovulate
- Causes ovulation.

Ovulation

- Release of ovum from ovary
- Follicle develops – like a blister on ovary
- Follicle bursts - egg is released
- A hole is left where the ova was forms a corpus luteum (CL) - yellow body.

Corpus Luteum

- Produces progesterone
- If female becomes pregnant, a new follicle does not burst and estrogen production is reduced.

Gestation

- Length of time from conception till birth
- Cows - 281 days

- Pigs - 114 days (3 months, 3 weeks, 3 days)
- Horses - 336 days
- Sheep - 148 days
- Goats - 151 days