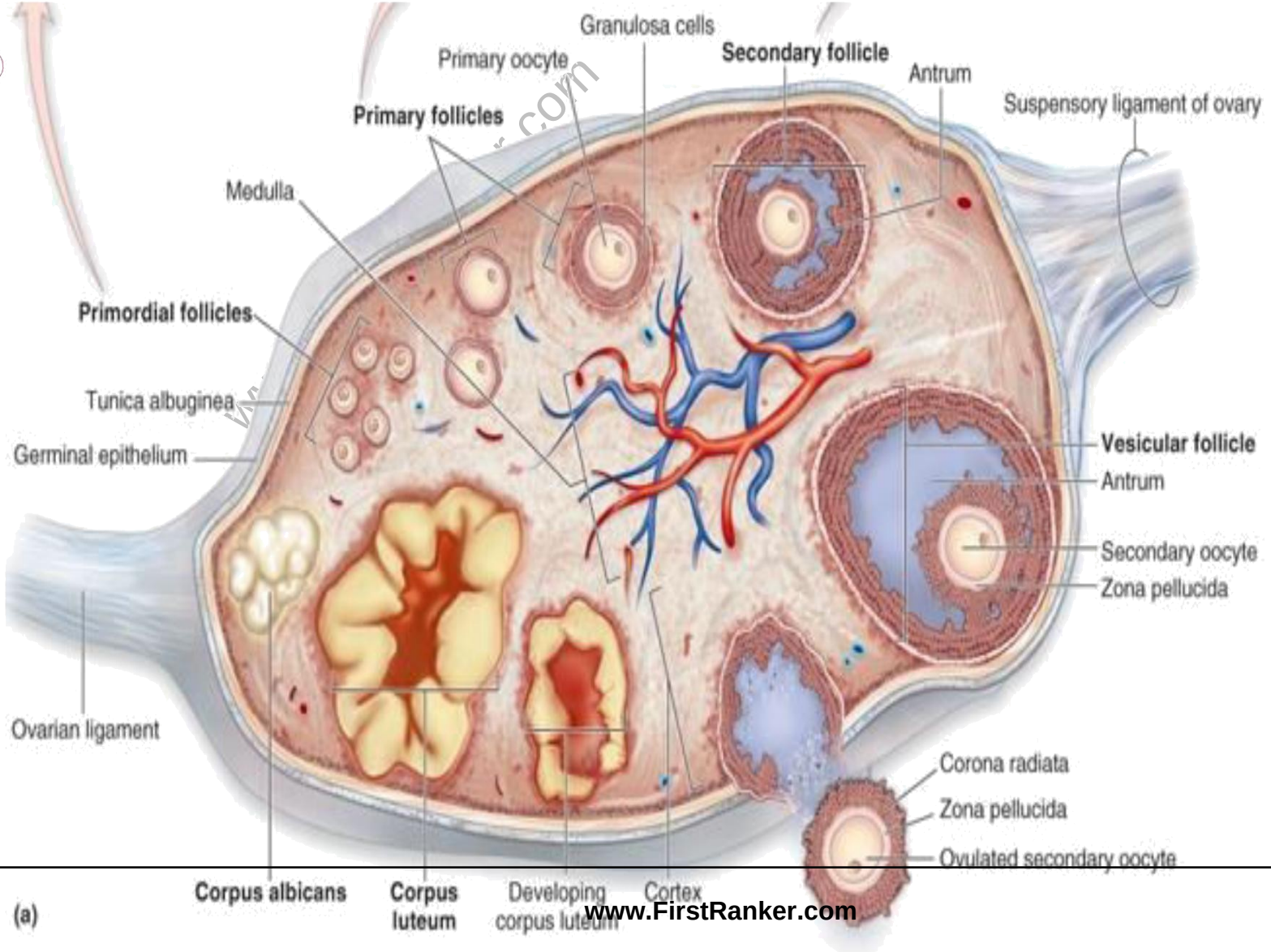
OVARIAN CYCLE

SECTION OF OVARY



- Females undergo regular monthly reproductive/sexual cycles commencing at puberty.
- Ovarian cycle
- Menstrual cycle

These sexual cycles involves the activity of:

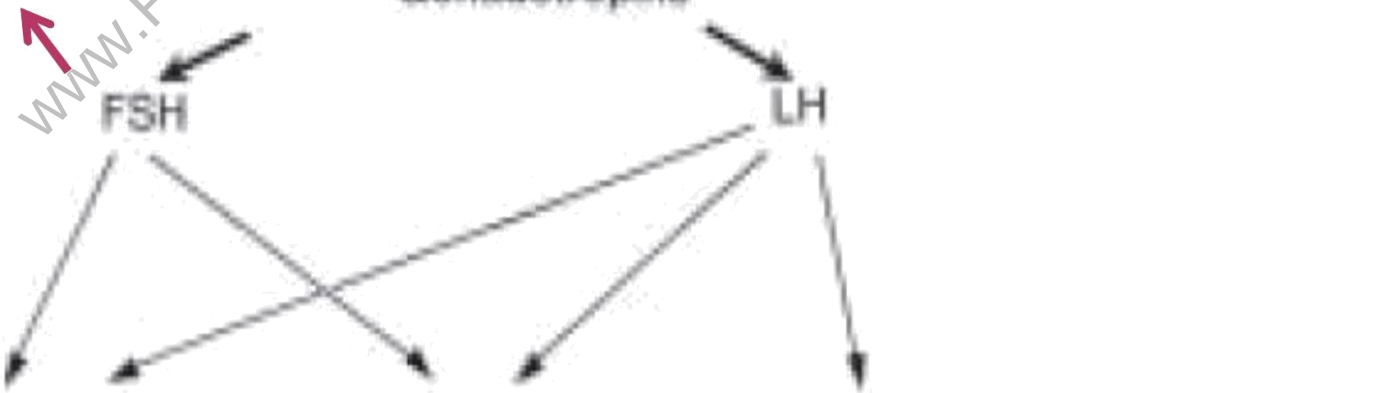
- Hypothalamus
- Pituitary gland
- Ovary
- Uterus
- Uterine tubes
- Vagina
- Mammary glands

- Function:

  To prepare the reproductive system for pregnancy

OVARIAN CYCLE

No effect on growth of primordial follicle to primary follicle



15-20 primary follicles

Atretic

Corpus atreticum

Functions:

FSH

- Necessary for the growth of primary, secondary & tertiary follicles
- Stimulates maturation of granulosa cells (GDF9)
- **Estrogens is Produced**

ESTROGENS

- Prepares the uterine endometrium to enter into proliferative phase
- Thinning of cervical mucus
- Stimulates the

by:

1. **theca interna** cells

   anderostendione + testosterone

2. **granulosa cells** convert them into →estrone & 17B-estradiol.

pituitary gland to secrete LH

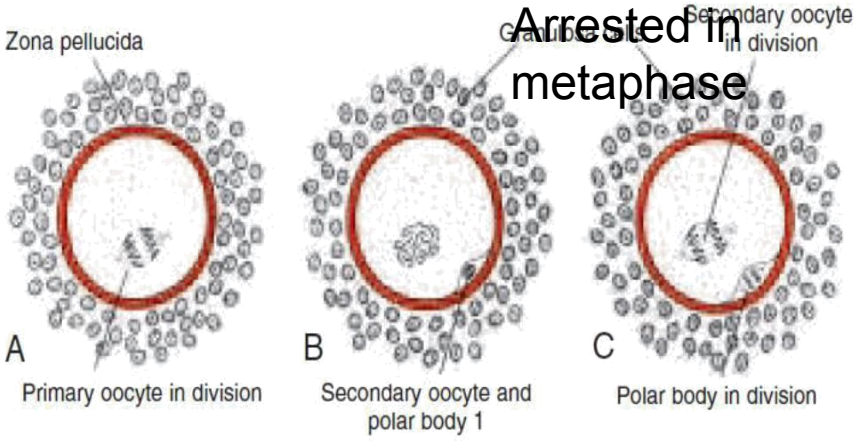
Cont...

LH SURGE

- Elevates the concentration of MPF causing oocyte to complete Meiosis I and initiate Meiosis II.
- Stimulates production of Progesterone by the follicular cells (luteinization)
- Causing follicular rupture & ovulation

PROGESTERONE

Brings secretory changes in the uterine endometrium
Prepares the uterus for implantation of embryo



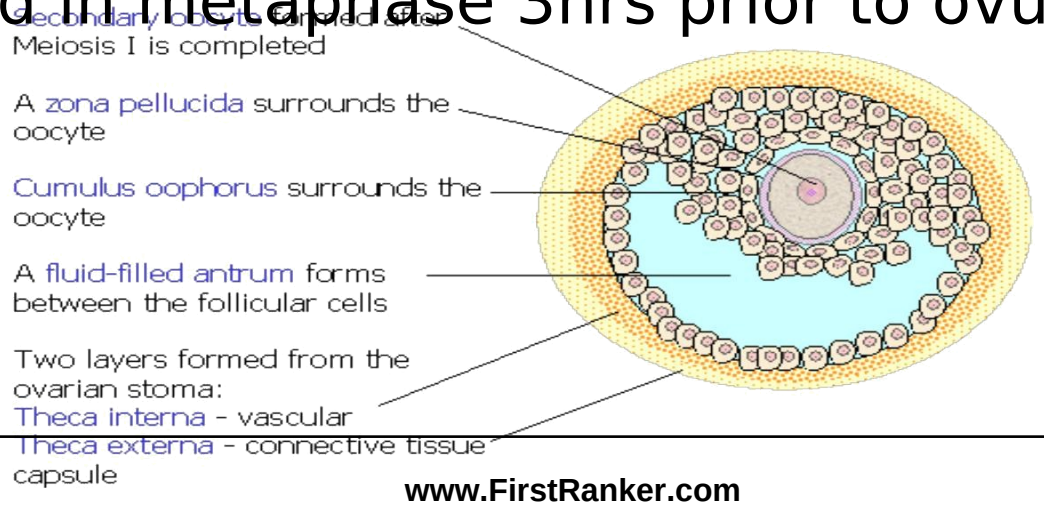
Arrested in metaphase

When secondary follicle is mature, LH surge
induces a preovulatory growth phase

OVULATION

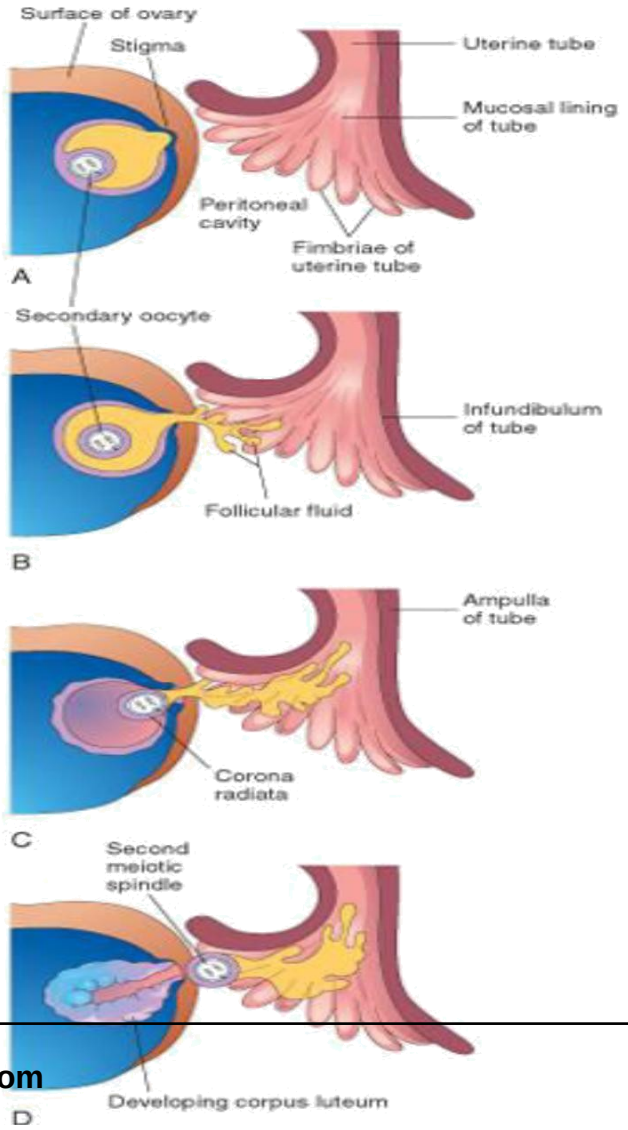
(Release of secondary oocyte)

- Prior to ovulation secondary follicle grows rapidly (25mm) under influence of FSH & LH
- At the same time abrupt increase in LH causes Meiosis I to complete and follicle to enter preovulatory stage, Meiosis II initiated and arrested in metaphase 3hrs prior to ovulation



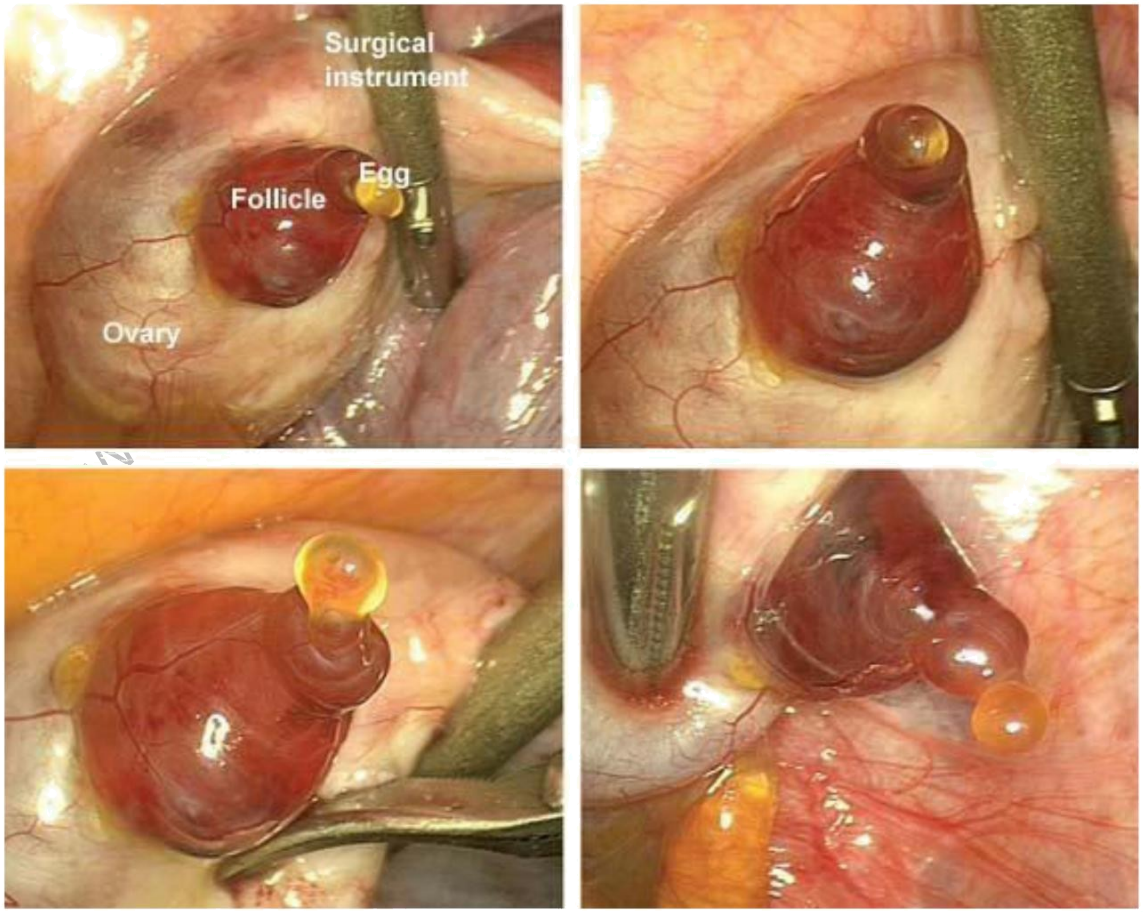
Cont…

- Increase in volume & pressure of follicular fluid
- Overlying ovarian cortex become thin & translucent
- Surface of ovary bulge locally: stigma formation
- High concentration of LH, increased collegenase activity that digests collagen fibers around follicle and increased PG levels increases muscular contractions of ovarian wall
- Oocyte along with granulosa cells break free (ovulation) .



- Rearrangement of cumulus oophorus cells around ZP forms corona radiata.

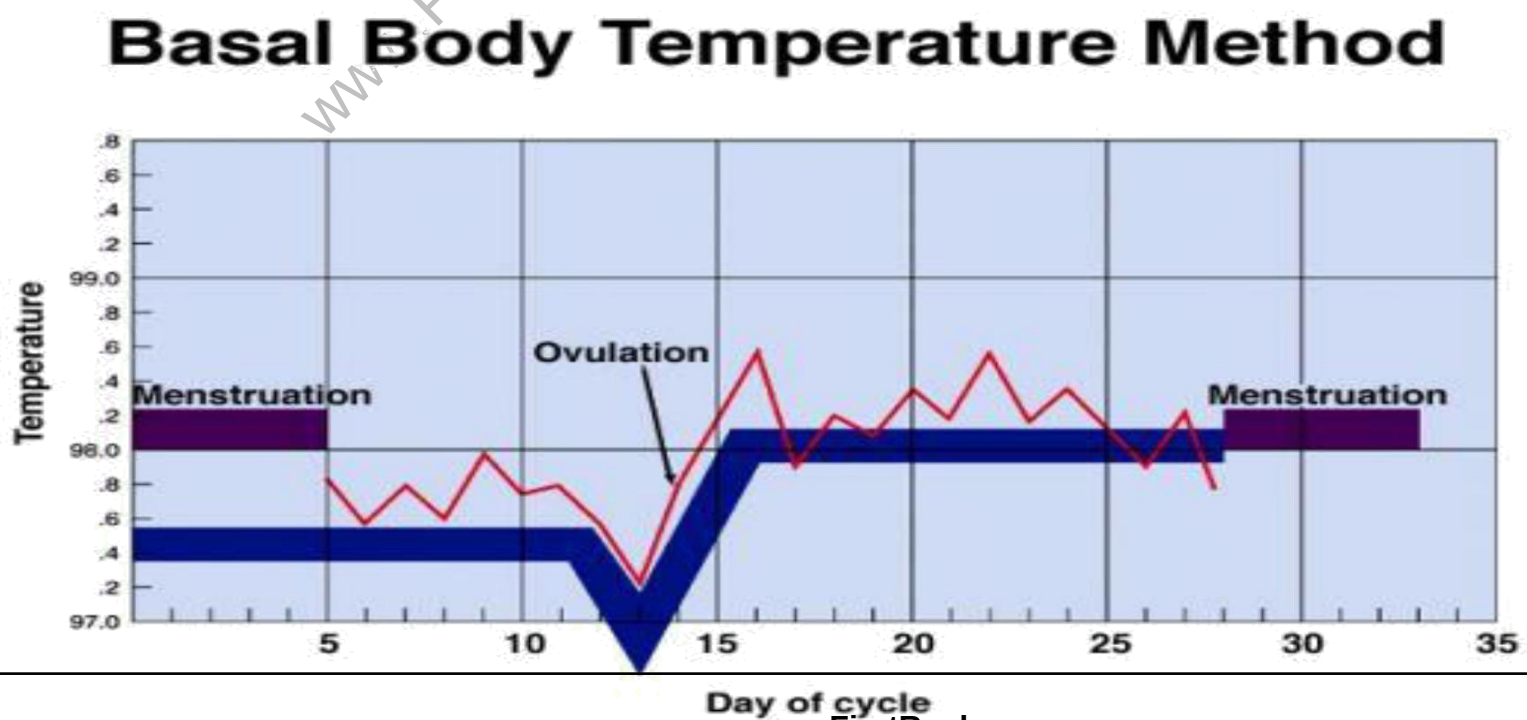
OVULATION



- **Surgeons who were performing hysterectomy witnessed spontaneous ovulation and were lucky to record it. Ovulation was not an explosive event as it is assumed but rather a 15 min long and smooth release of an egg.**

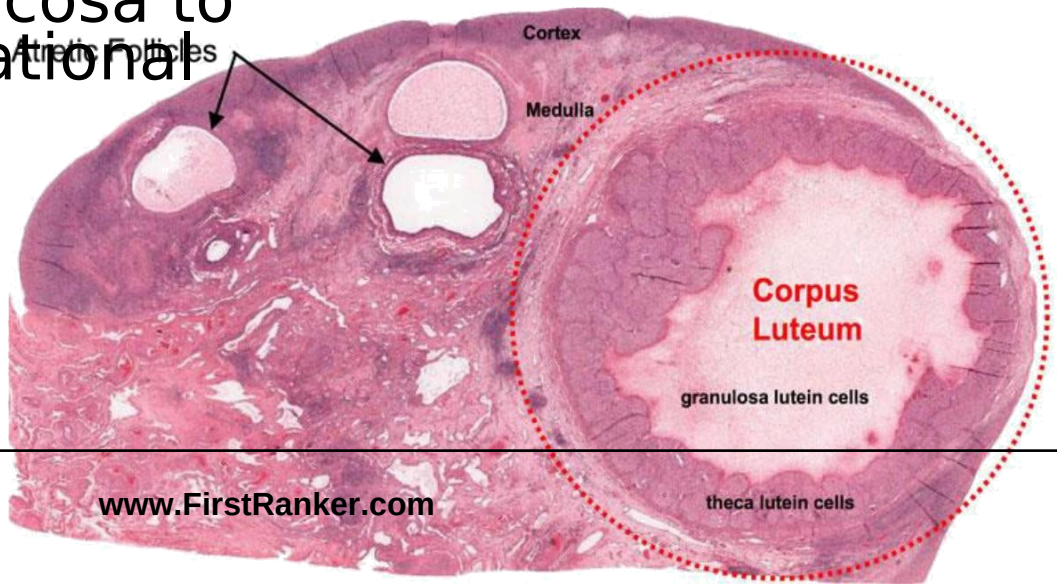
OVULATION SYMPTOMS

- Middle pain (Mittelschmerz):
- Rise in basal body temperature



Corpus Luteum (LH)

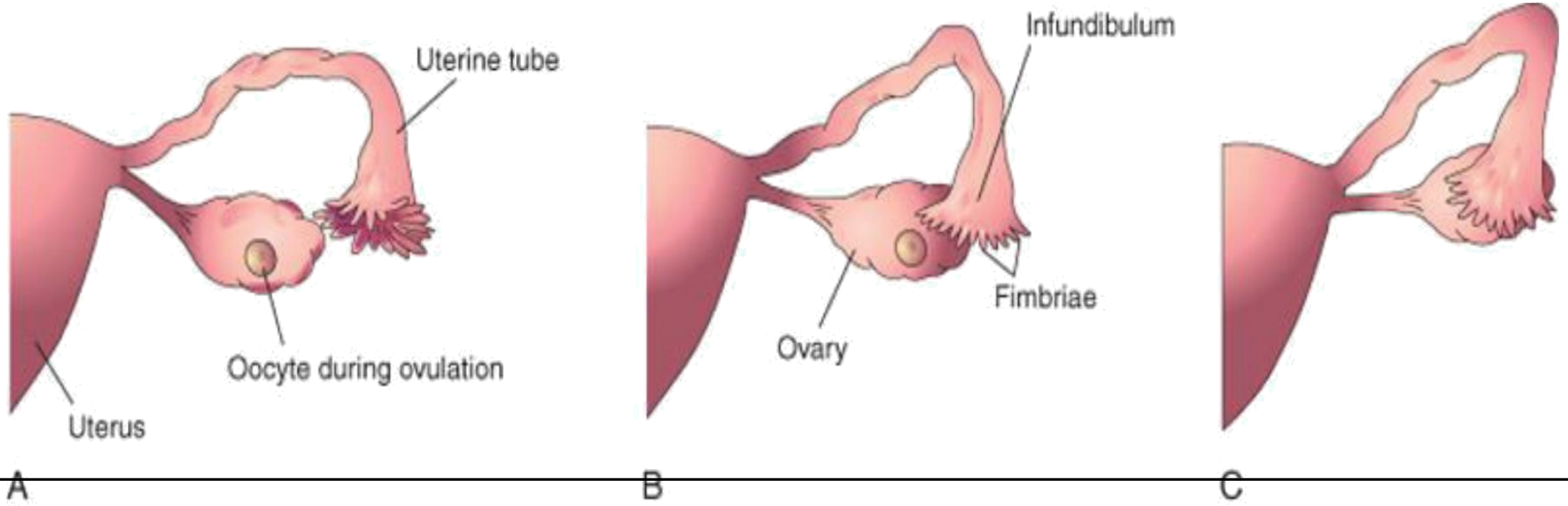
- After ovulation, Follicle collapses
- Granulosa and theca interna cells hypertrophy, leutenized & vasularized
- Secretes Progesterone some estrogens.
- Causes uterine mucosa to enter into progestational phase.



OOCYTE TRANSPORT

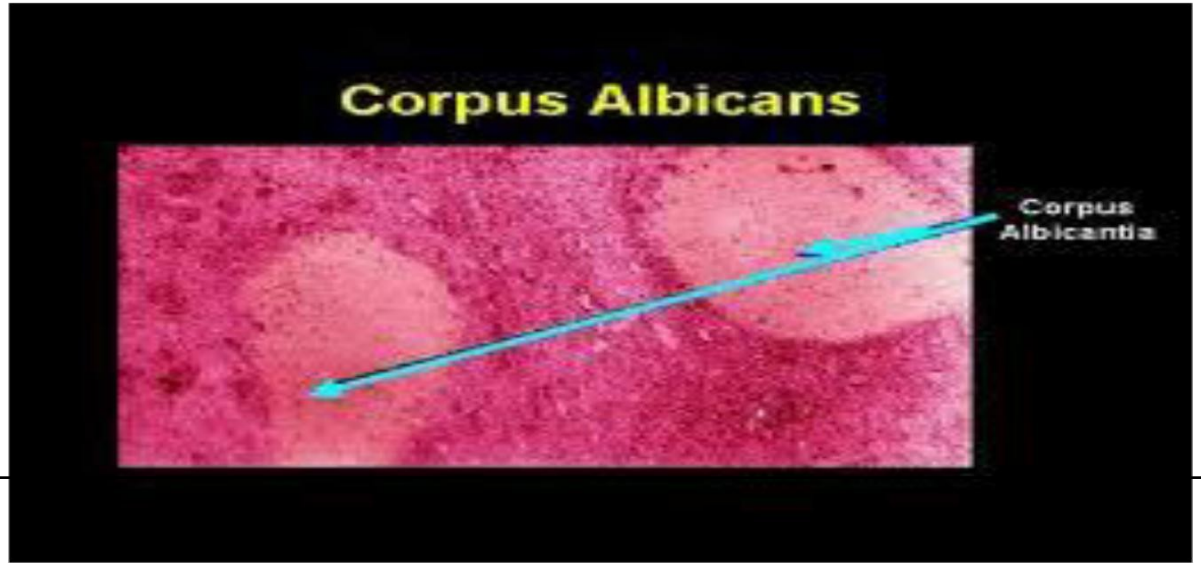
- Sweeping movements of fimbriae
- Rhythmic muscular contractions of tube
- Motion of cilia in tubal mucosa
- Fluid currents

Fertilized oocyte reaches uterine lumen in 3-4 days



Corpus albicans (Absence of HCG)

1. **Latin for "whitening body“ is the regressed form of** the corpus luteum. As the corpus luteum is being broken down by macrophages, fibroblasts lay down type



I collagen forming the corpus albicans. The remains of the corpus albicans may persist as a scar on the surface of the ovary.