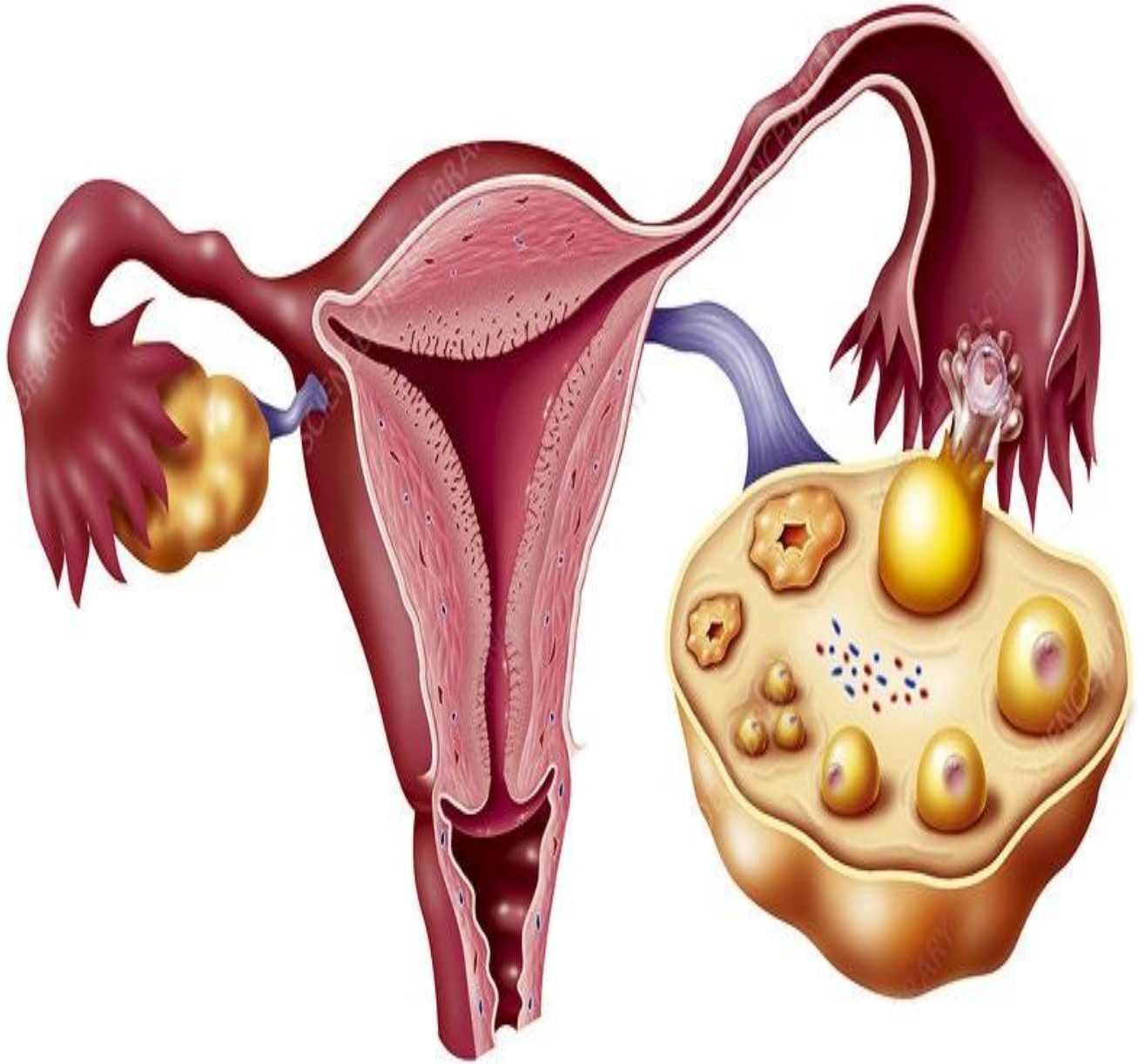
OVARIAN & UTERINE CYCLES



BY

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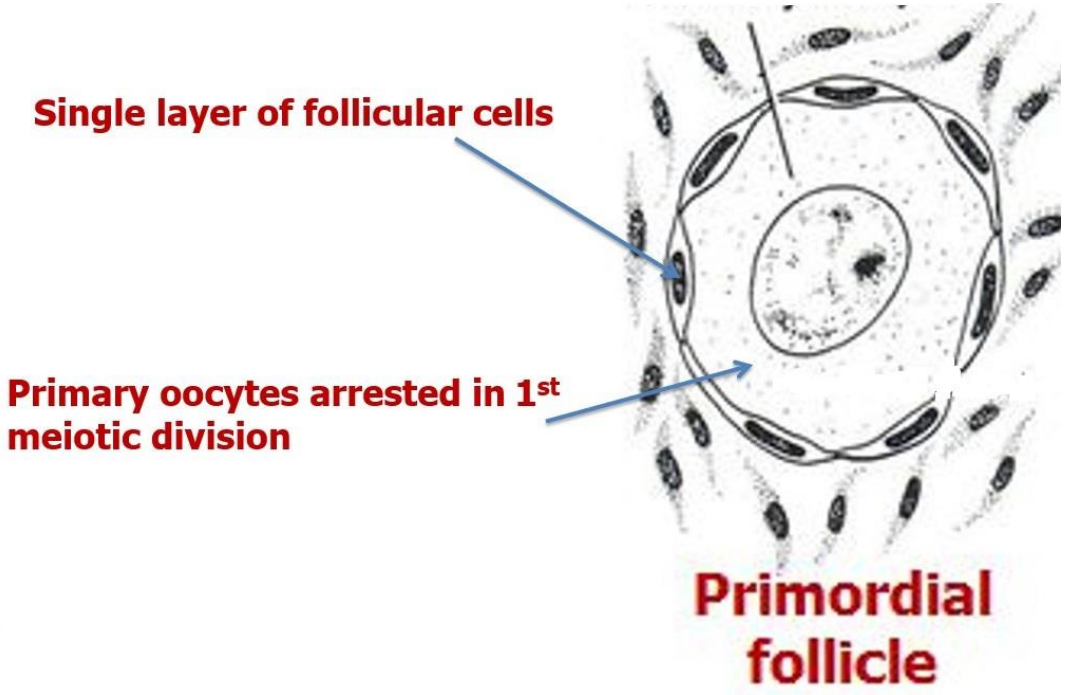
REVISION

Structure of primordial follicles

1- primary oocytes arrested in 1st meiotic division

2- surrounded with a layer of flat follicular cells



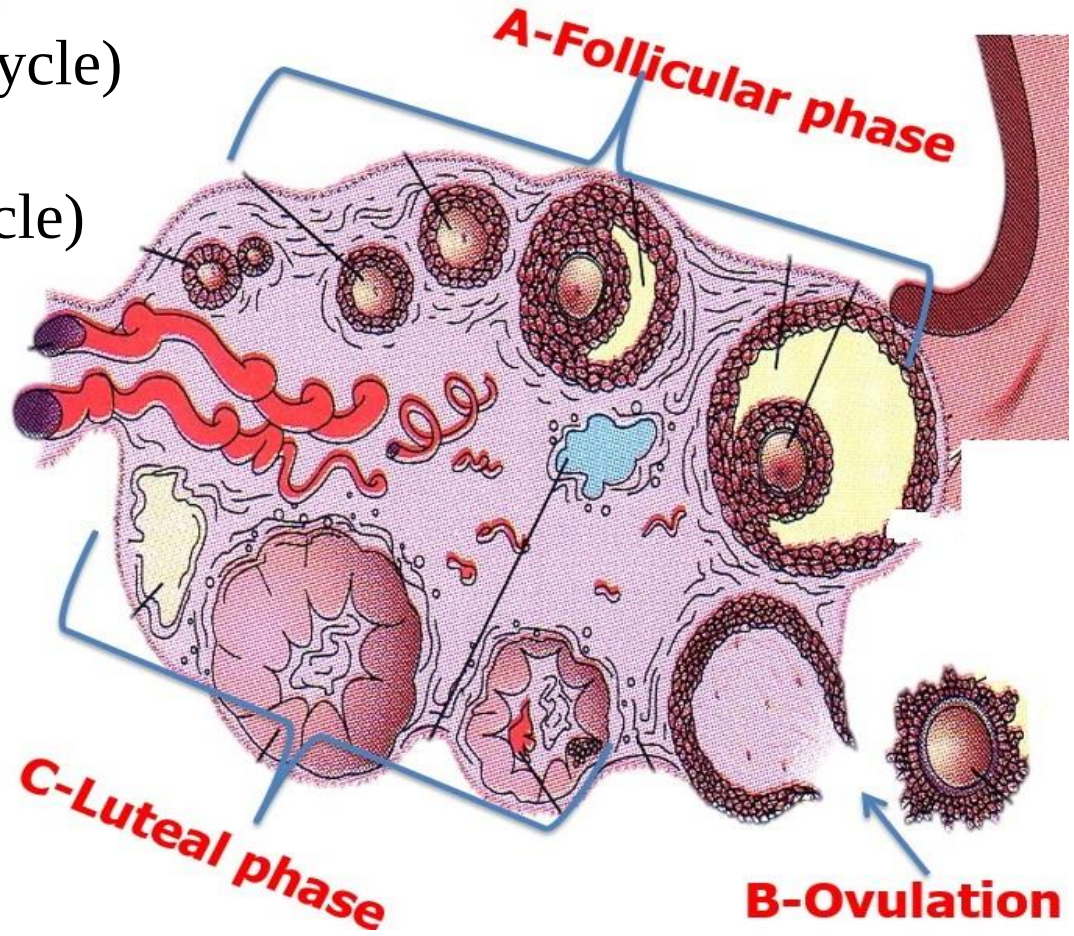
OVARIAN CYCLE

Def.

cyclic changes occur in the cortex of the ovary every 28 days during the fertile period which starts at puberty(11-14 year) & ends at menopause(45-50 years).

Phases

1- Preovulatory phase = follicular phase (1st ½ of the cycle)
2- Ovulation: at the 14th. Day ±1
3- Postovulatory phase = luteal phase (2nd ½ of the cycle)



OVARIAN CYCLE

Phases

1- Preovulatory phase = follicular phase (1st ½ of the cycle)

it is under effect of FSH of the anterior pituitary

A- the primordial follicle ⟶ 1ry follicle

about 15 – 20 primordial follicles start maturation to be primary follicle as follows:

1-Flat follicular cells become cuboidal & increase in number , become granulosa cells

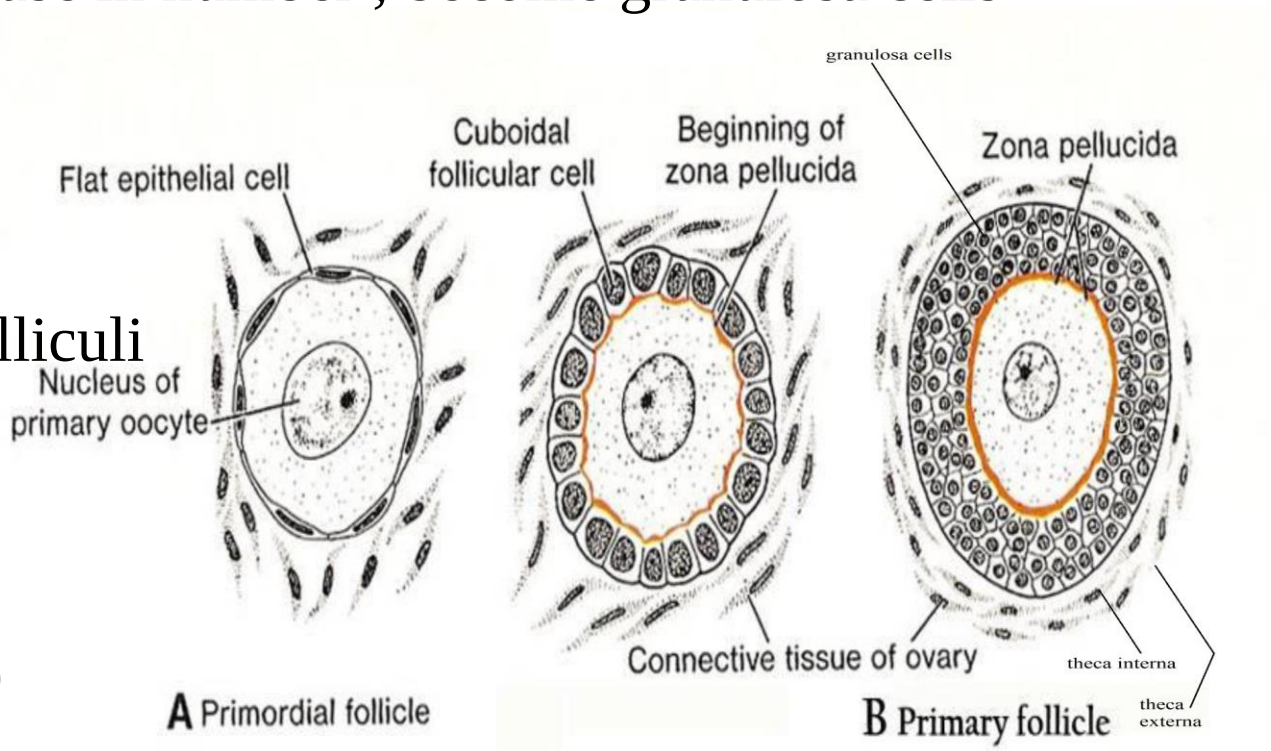
2-granulosa cells secrete Zona pellucida
which is glycoprotein membrane
formed ( ) oocyte & granulosa cells.

3-connective tissue of the ovary form theca folliculi
(theca interna that secrete estrogen
– theca externa that form a capsule)

Now the **1ry follicle** consists of

1- Primary oocyte (in the 1st. meiotic division)

2-zona pellucida 3-Granulosa cells 4-theca interna 5-theca externa



OVARIAN CYCLE

Phases

1- Preovulatory phase = follicular phase (1st ½ of the cycle)

B- the primary follicle ⟶ secondary follicle

the 1ry follicles continue the maturation to be 2ry follicle as follows

1-Small spaces filled with fluid appear between the granulosa cells

2-These spaces gather to form a large single crescentic cavity (called antrum) filled with fluid

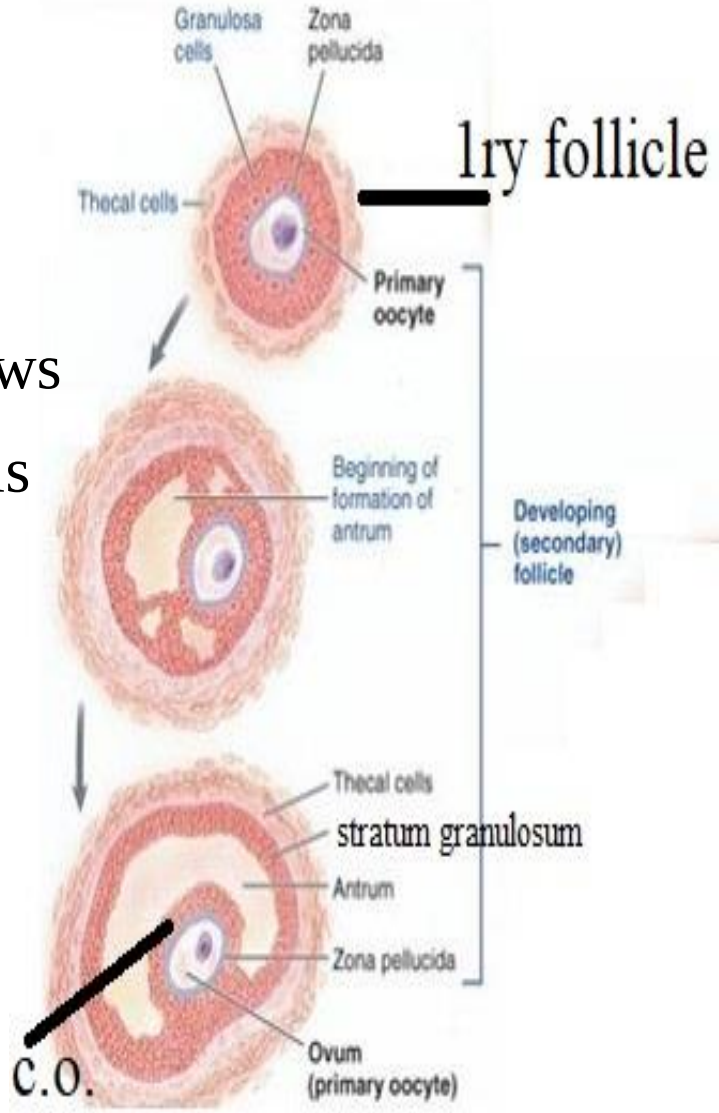
3-This antrum divides the granulosa cells into 2 groups

a- An outer layer called stratum granulosum

b- An inner layer called cumulus oophorus

Now the secondary follicle consists of

1-primary oocyte(in the 1st. meiotic division) 2- zona pellucida 3-cumulus oophorus 4- antrum 5- stratum granulosum 6-theca interna 7-theca externa

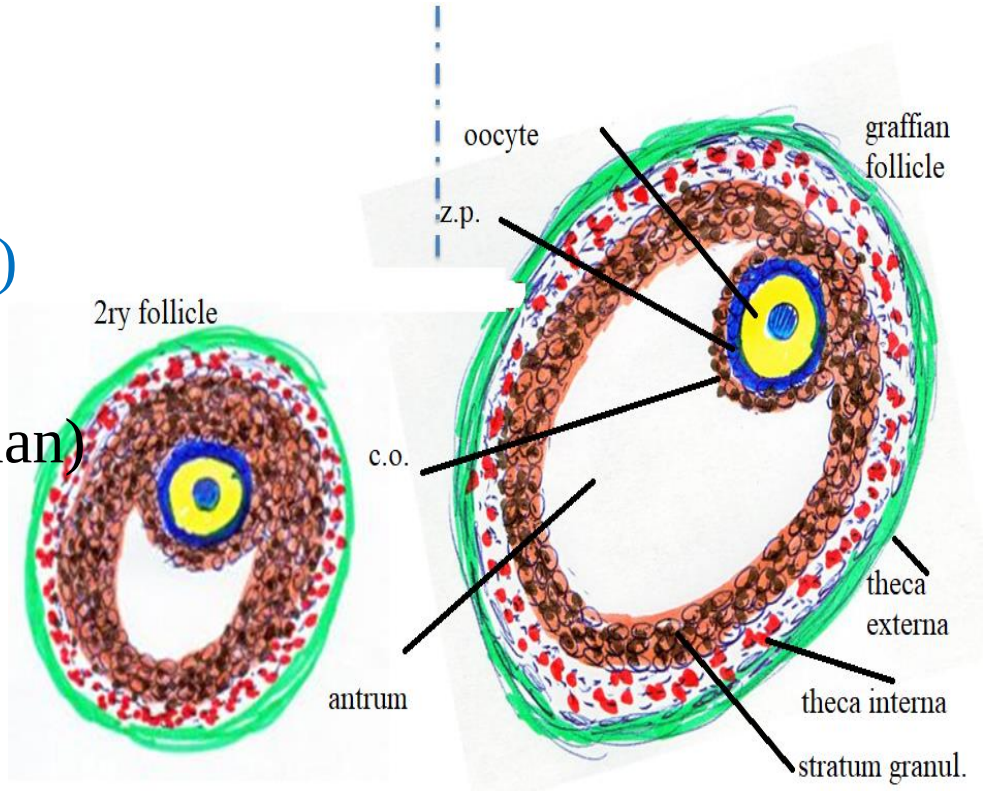


OVARIAN CYCLE

Phases

1- Preovulatory phase = follicular phase (1st ½ of the cycle)

C- the secondary follicle ⟶ tertiary follicle



the 2ry follicles become 3ry (Tertiary) (vesicular or Graafian)
by increasing the fluid in the antrum several times
so its structure is the same as secondary follicle
but with expanded antrum

N.B: one follicle matures & others become atretic

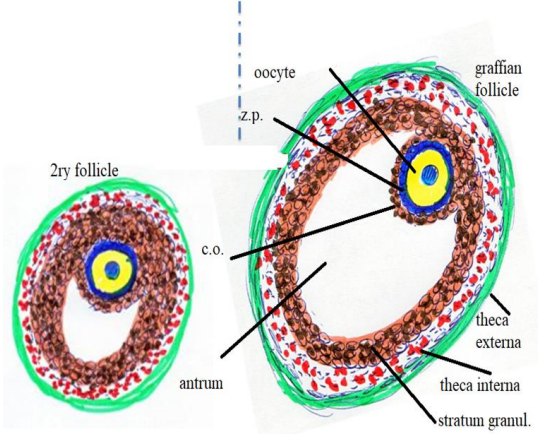
N.B.:- just before ovulation: primary oocyte completes 1st meiotic division forming 2 haploid daughters cells each has 23 chromosome

1-1st polar body :- small as it takes none of cytoplasm
It divides by 2nd. Meiotic division into 2 polar bodies which degenerate

2- 2ry oocyte :-large as it takes all cytoplasm
at the moment of ovulation it start 2nd meiotic division& arrested in it till fertilization

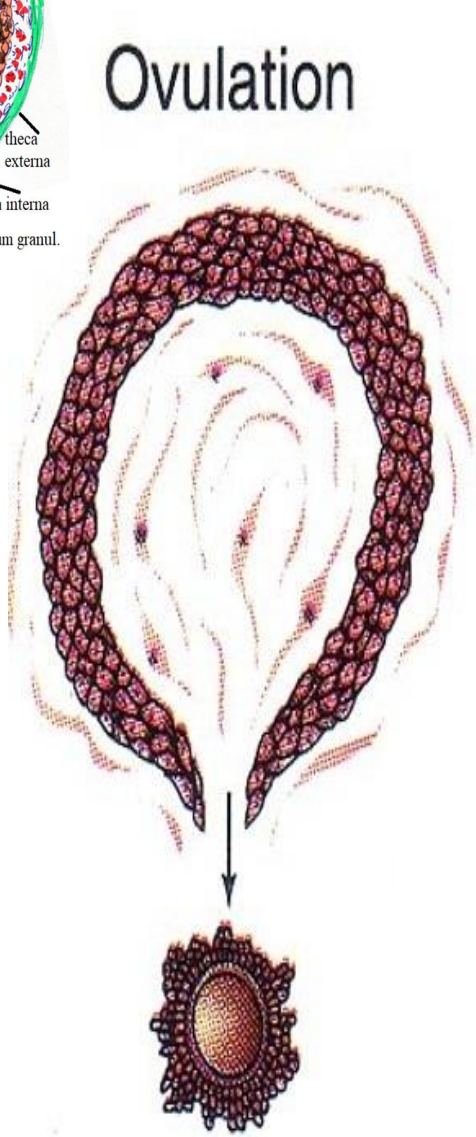
OVARIAN CYCLE

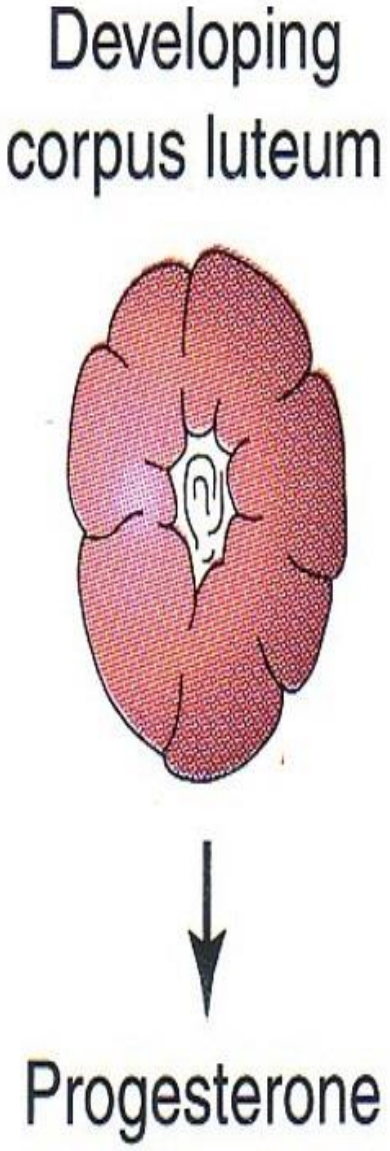
Phases



2- Ovulation: at the 14th. Day ±1
it is under effect of LH
- mechanism of ovulation: -
1-weakness of the capsule of the follicle
2-increase pressure of the antral fluid

-leading to shedding of ovum which is
1-secondary oocyte arrested in 2nd meiotic division
2-surrounded by zona pellucida & corona radiata (previous cumulus oophorus) from Graafian follicle.





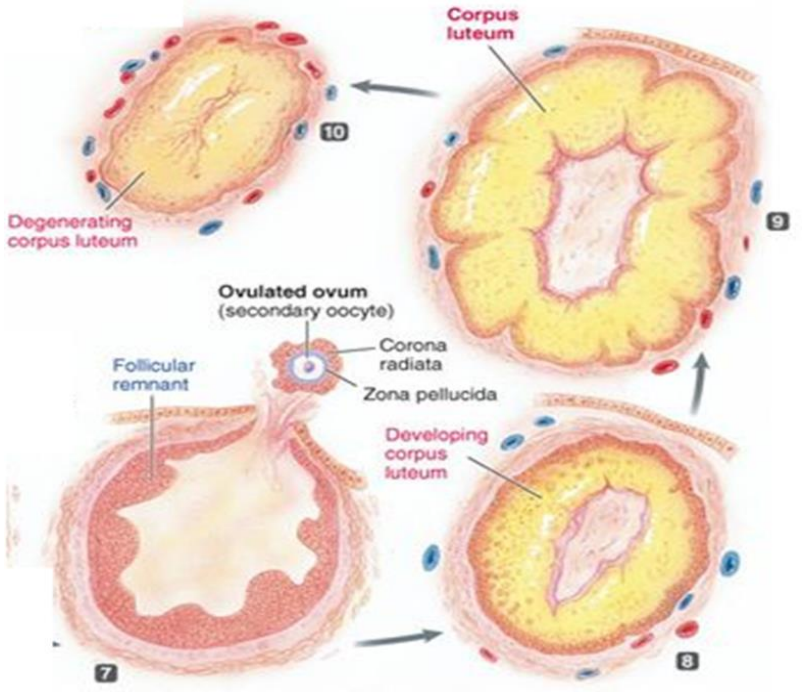
OVARIAN CYCLE

Phases

3- Postovulatory phase = luteal phase (2nd ½ of the cycle)

it is under effect of LH

LH deposits yellow pigment in the cells
of the ruptured Graafian Follicle
transforming it into corpus luteum
that secrete progesterone for growth of endometrium



Fate of corpus luteum

fertilization	no fertilization
- corpus luteum continues for 4th month to secrete progesterone to fixate pregnancy till placenta is formed.	- corpus luteum continues for 10 days to secrete progesterone for endometrial growth in luteal phase. - 4 days before next menstruation (i.e. 25th – 28th of ovarian cycle). ↓ LH → regression of corpus luteum into functionless corpus albicans → ↓ progesterone → menstruation

UTERINE CYCLE

Layers of the endometrium

1- Superficial layer (the compact layer)

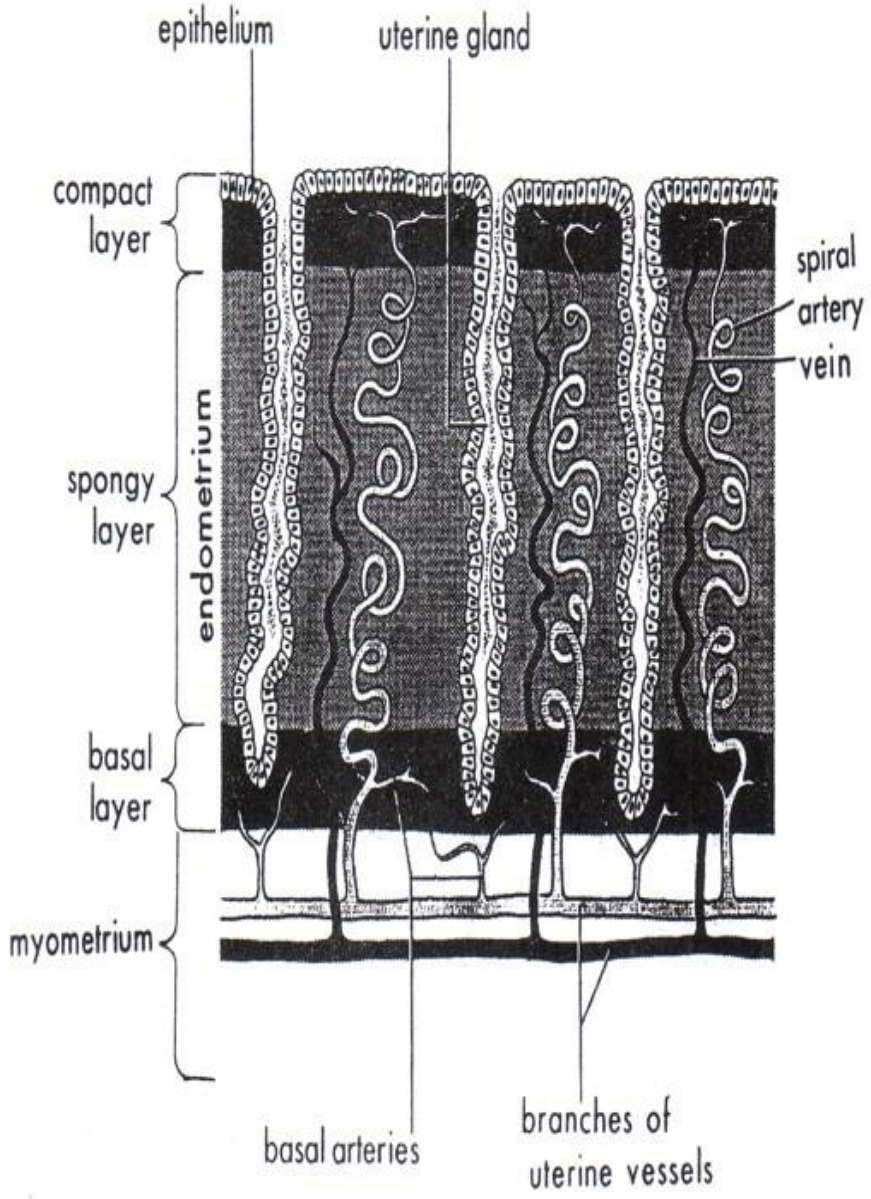
- it contains the neck of the glands

2- Middle layer (the spongy layer)

edematous layer containing the body of the glands

3- The basal layer

- is a thin layer containing the basal part of the gland
- it is responsible for regeneration of the endometrium
- it is not lost during Administration

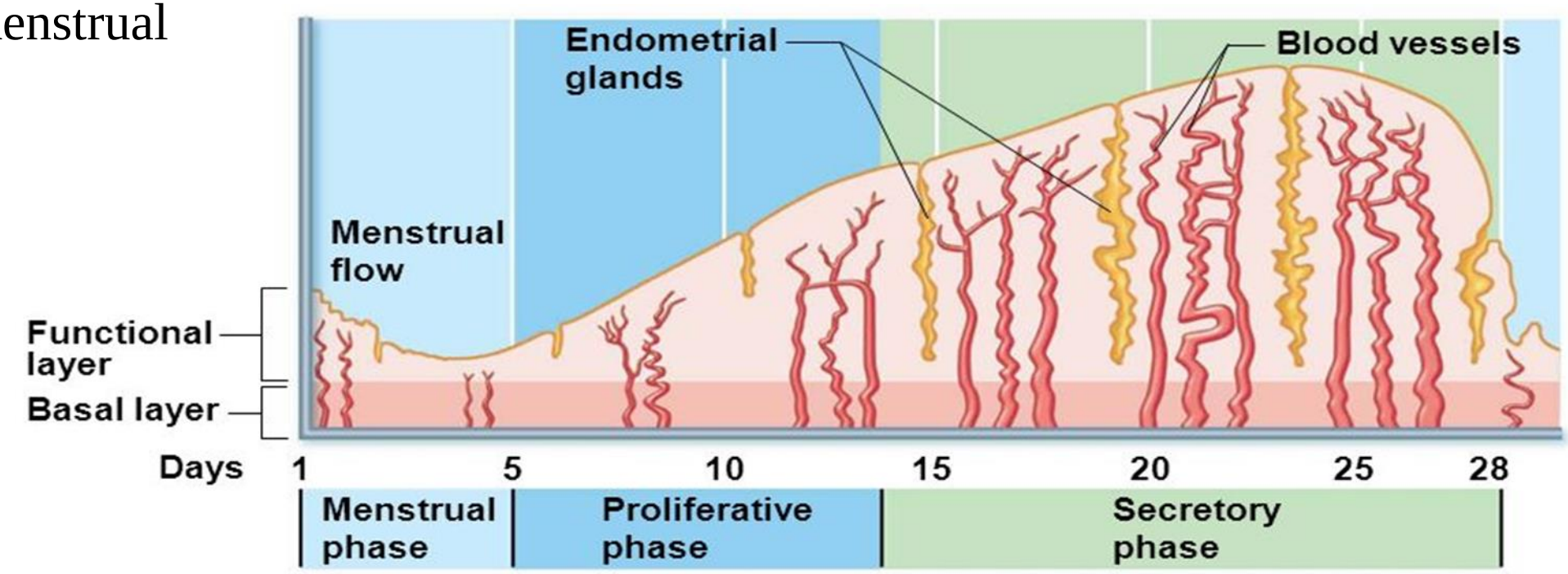


UTERINE CYCLE

Def. cyclic changes occur in the endometrium every 28 days from puberty till menopause in response to the ovarian cycle.

Phases

1. Menstrual phase
2. proliferative=postmenstrual
3. secretory =premenstrual



UTERINE CYCLE

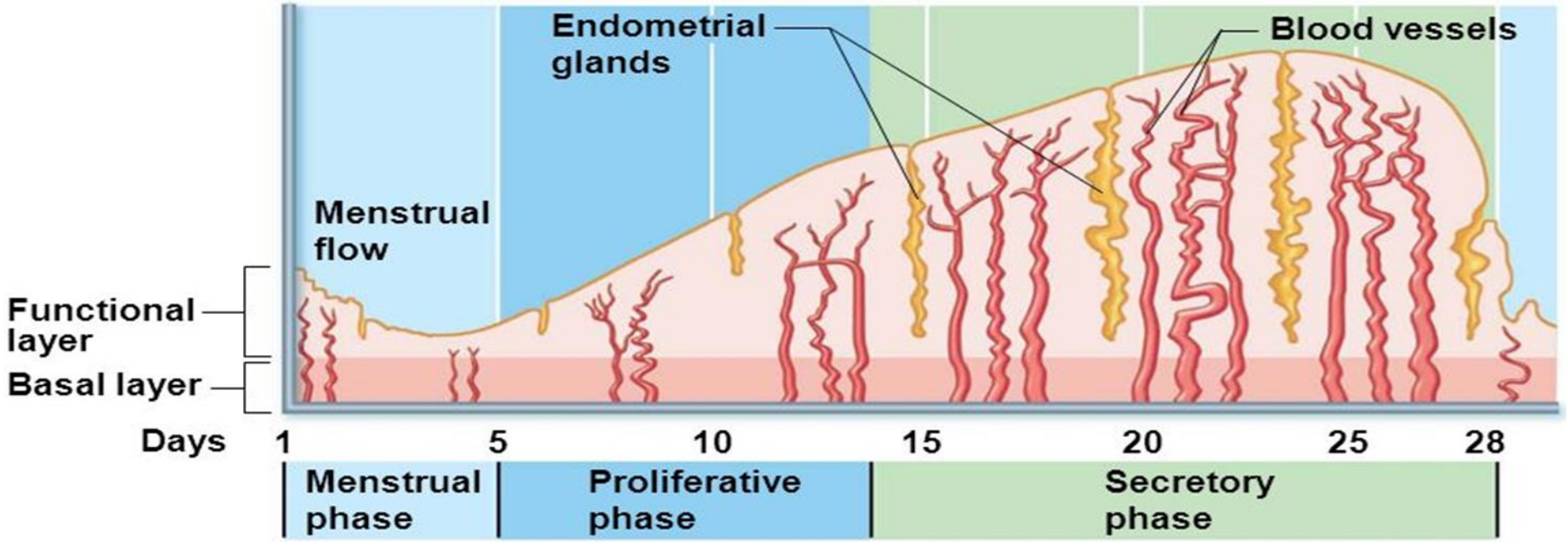
Phases

1- menstrual phase

- there is loss of non collected blood , part of glands , blood vessels and endometrial cells

- It occurs due to spasm of the endometrial arteries as a result of the degeneration of corpus luteum

- it is completed within 3 – 4 days

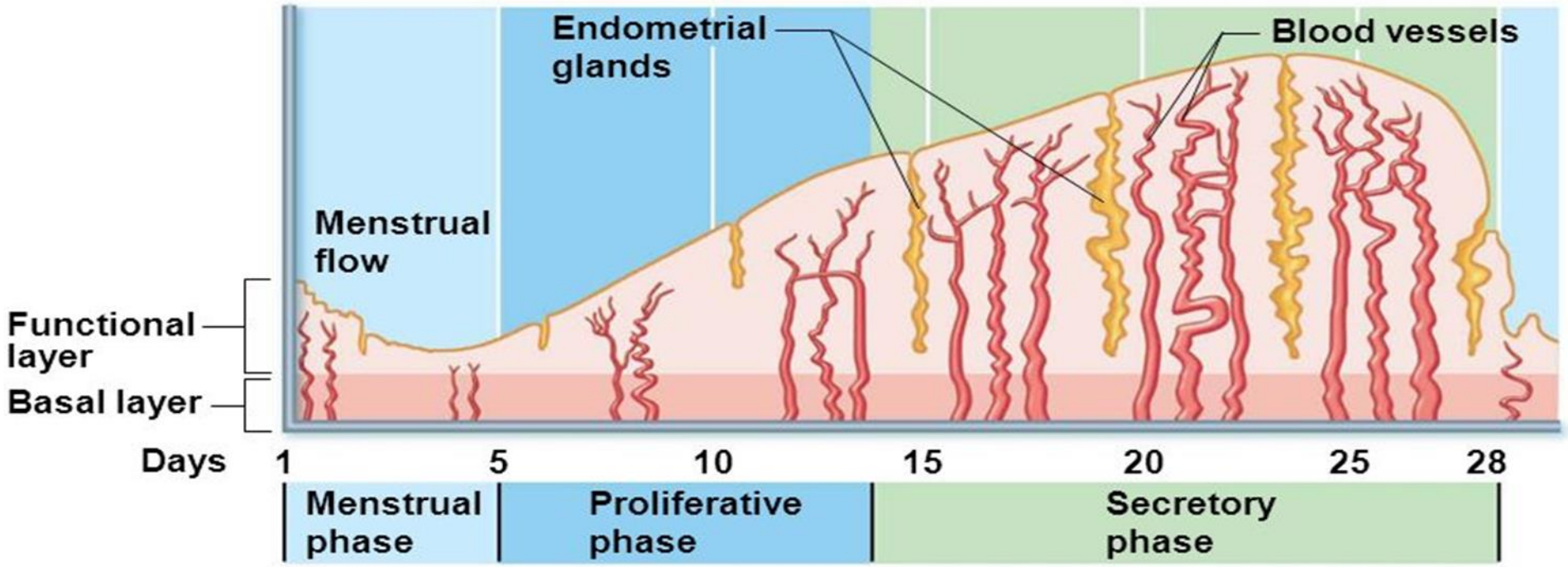


UTERINE CYCLE

Phases

2 proliferative phase =follicular =post menstrual phase

- endometrium restores its loses and its thickness become 4 mm
- glands become longer but straight
- this phase is under effect of estrogen



UTERINE CYCLE

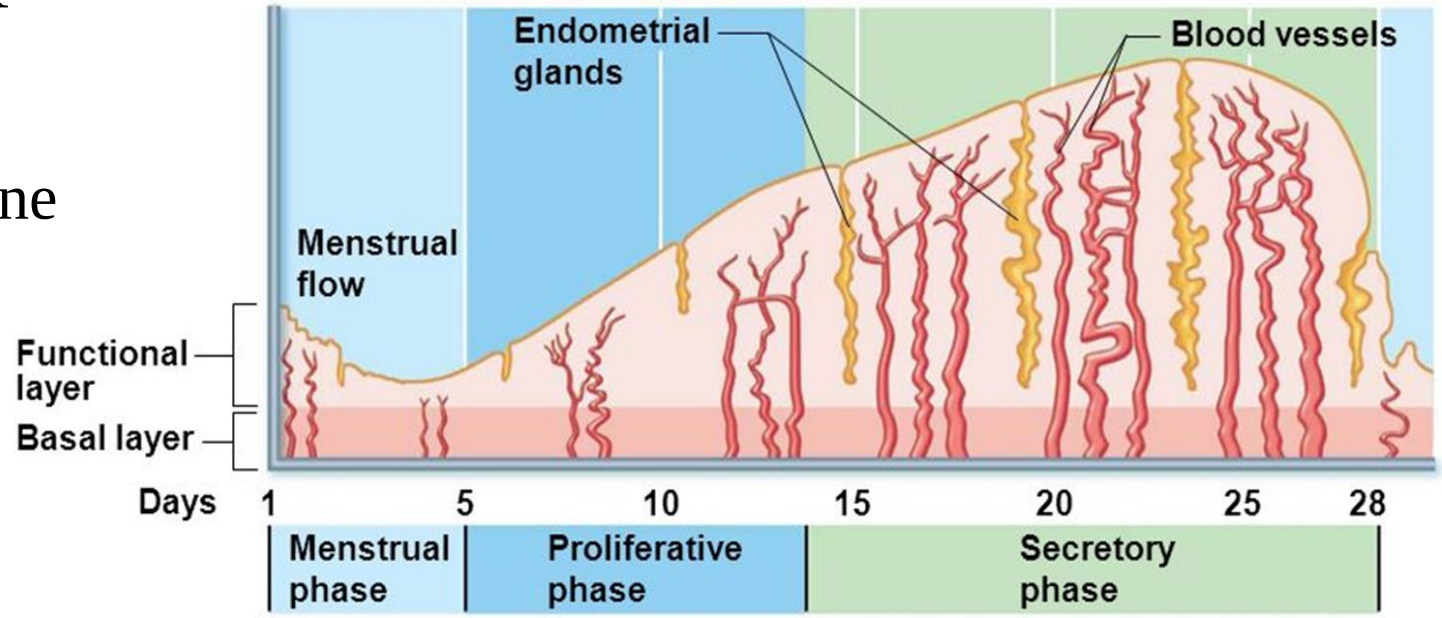
Phases

3- secretory phase = luteal phase = premenstrual phase

-blood vessels and the glands becomes spiral and filled with mucus and glycogen (uterine milk).

- endometrium become differentiated into
  superficial compact ,
  Middle sponge &
  the basal layers

- this phase is under effect of progesterone produced by corpus luteum
- it lasts for 14 days



THANQ