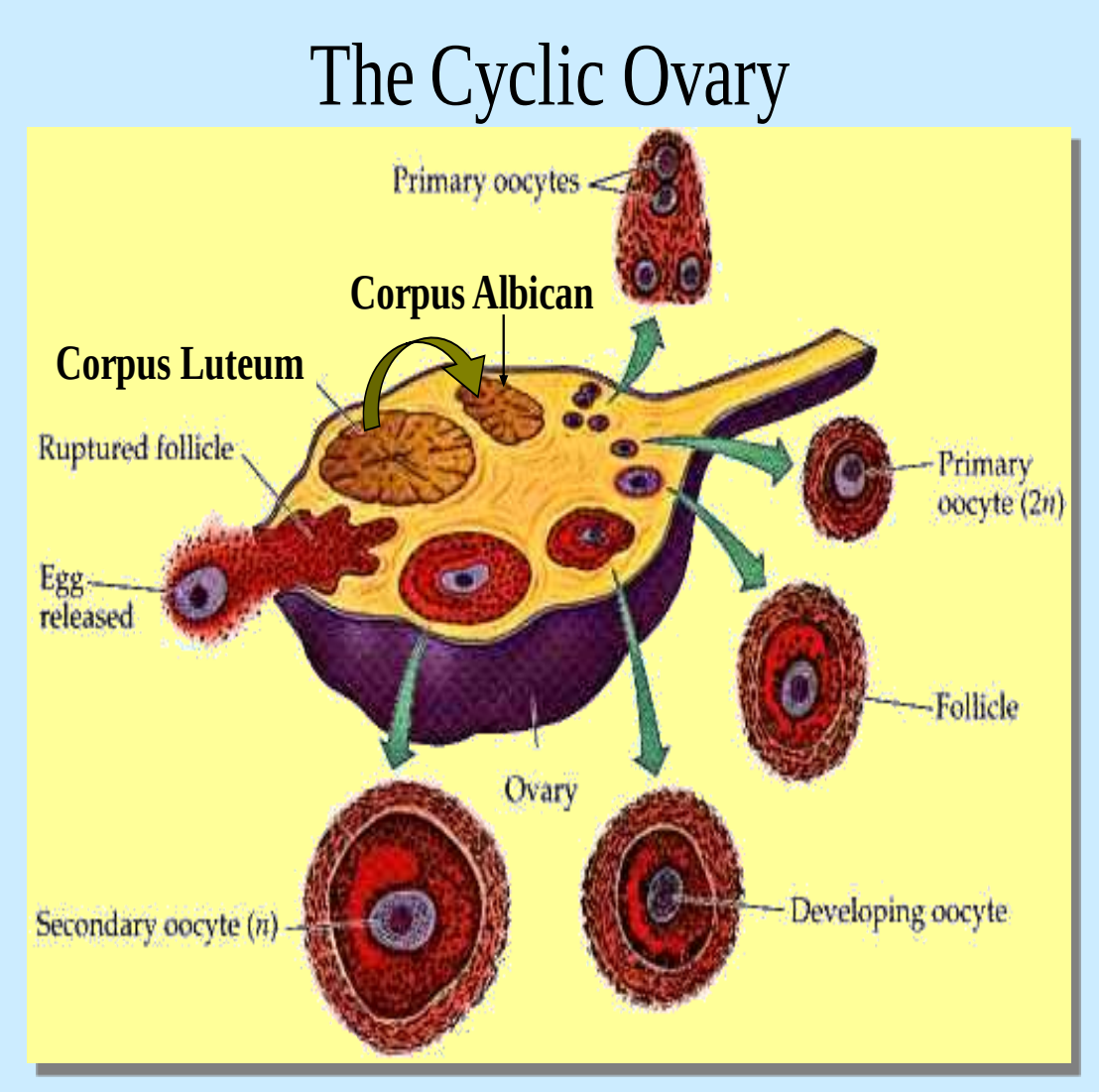
Luteolysis

After ovulation, and (in ruptured follicle), a structure called corpus haemorrhagicum is formed and then it is luteinized to form corpus luteum which produces progesterone hormone ,the lifespan of corpus luteum is 13 – 14 day and It begins to regresses (luteolyse) in non pregnant animals to restart a new cycle, the site of regressed corpus luteum (CL) is called corpus albicans .



The **prostaglandin F2α** (**PGF2 α**) is the natural luteolytic factor or hormone for of corpus luteum in the majority of the domestic animals.

Estradiol17Beta helps in building of oxytocin receptors in the cells of endometium , oxytocin activates cyclase enzyme system in these cells to synthesize PGF2α that is responsible for luteolysis of corpus luteum.

Mechanisms Of Luteolysis of C.L. by PGF2α

several mechanisms have been proposed to explain luteolytic activity of PGF2α which are:

1- **PGF2α induces constriction of uteri-ovarian vessels causing ischemia and starvation of luteal cells and decreasing of progesterone secretion .**

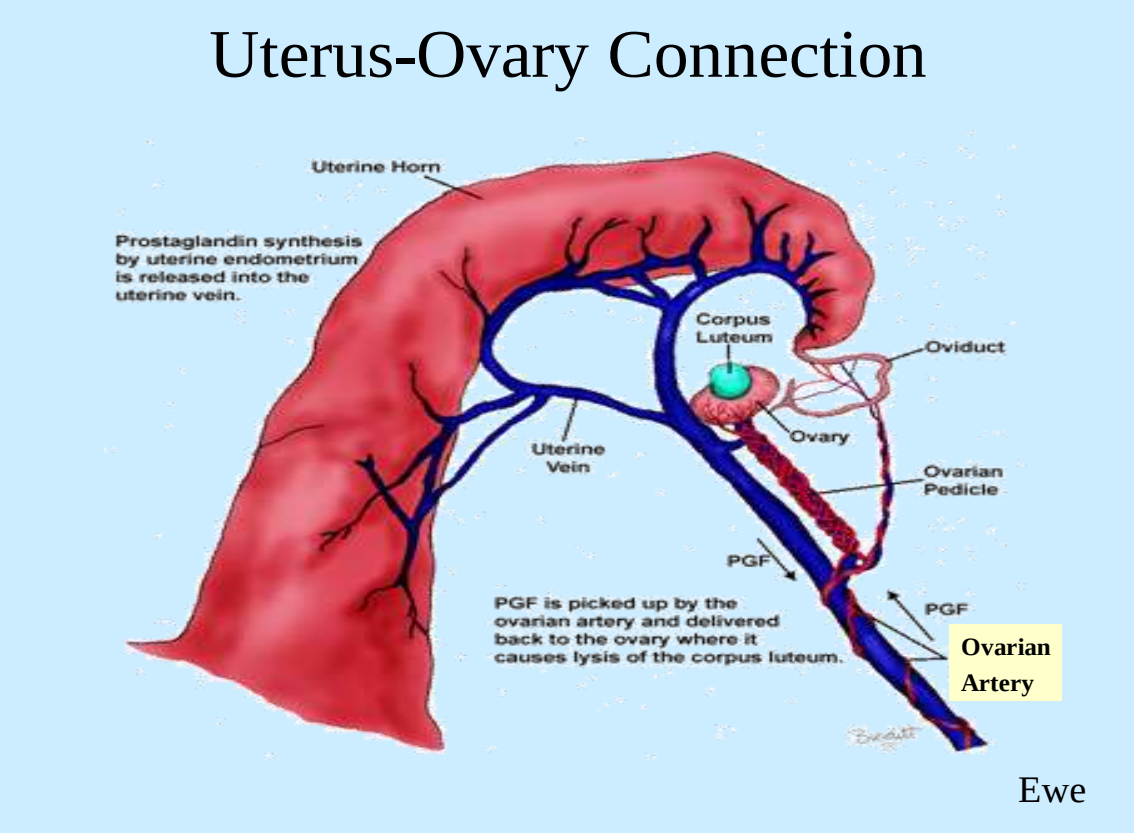
2- **PGF2α interferes with progesterone synthesis by luteal cells.**

3- **Competition with LH for the receptor sites on the ovarian follicle.**

4- **Destruction of LH receptors leading to decrease supporting of luteal cell and decreasing of progesterone secretion.**

How does PGF2& reach corpus luteum?

For all species the ovarian artery is convoluted and follow a tortuous feature along major (ewe, cow) or minor (mare, bitch, queen) branches of utero-ovarian vein draining the uterus, therefore PGF2α pass across by diffusion from utero – ovarian vein to ovarian artery and reach luteal cells in ovary by a mechanism called(**countercurrent mechanism)** and this called utero-ovarian pathway. This mechanism founded in cow and ewe so uterine horn control corpus luteum on adjacent side (same side of uterine horn and ovary)(**ipsilateral)** through local luteolytic pathway in the non pregnant animals , so remove uterine horn that adjacent to ovary (carrying C.L.) leads to prolong the lifespan of C.L.,.



In mare and sow the systemic pathway of uterine horn controls the regression of corpus luteum.The PGF2α is absorbed into the uterine venous drainage, enters the circulation, and reaches the ovaries by a systemic route.

Rapid luteolysis is caused by the PGF2α, resulting in a decline in circulating progesterone concentration.

PGF2α that given exogenous effectively induces luteal regression and shorten the length of estrous cycle only when corpus luteum is fully formed (mature C.L.) therefore PGF2α is not luteolytic during the first 4-5 day of diestrus in cow, and ewe.