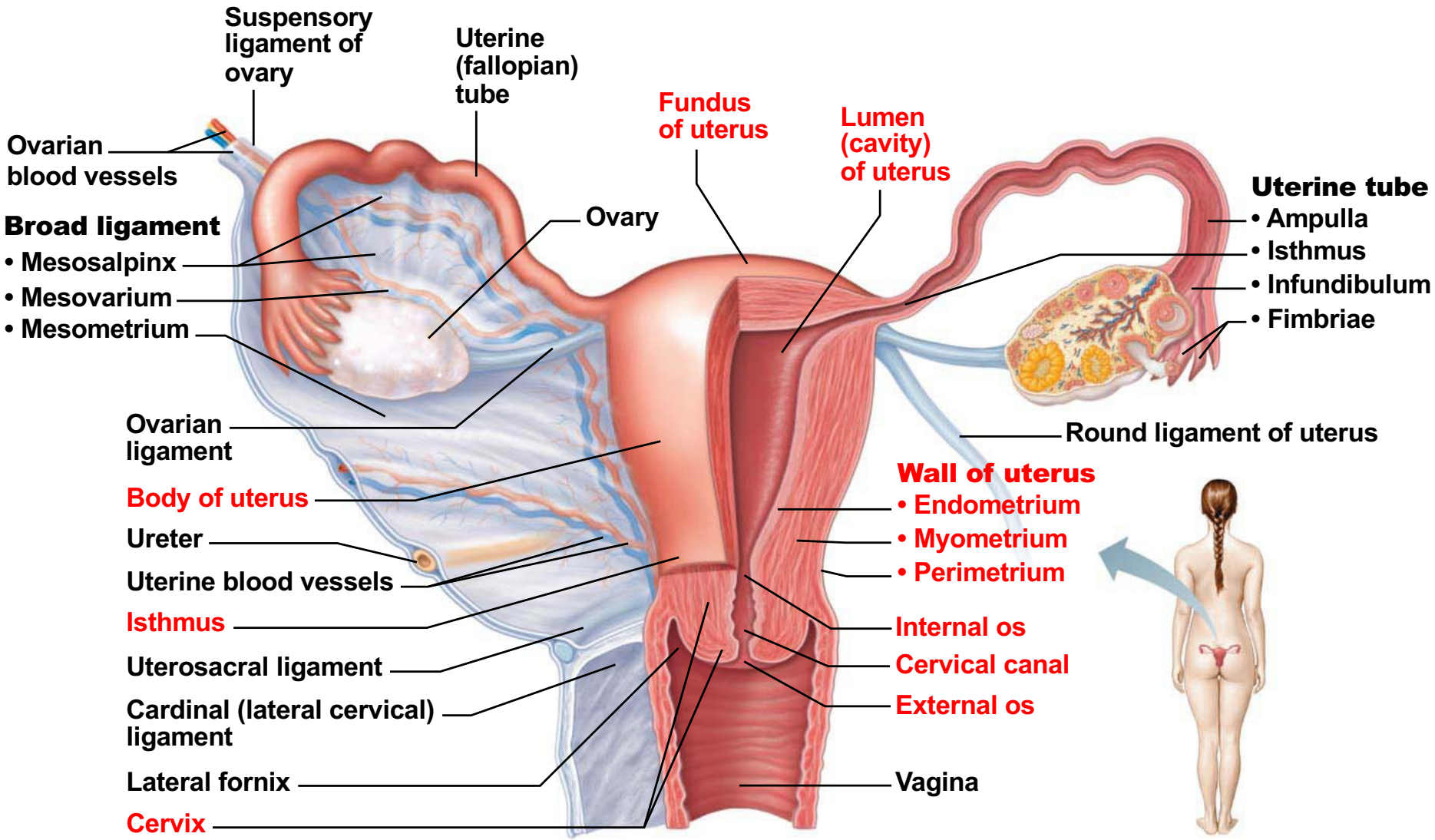
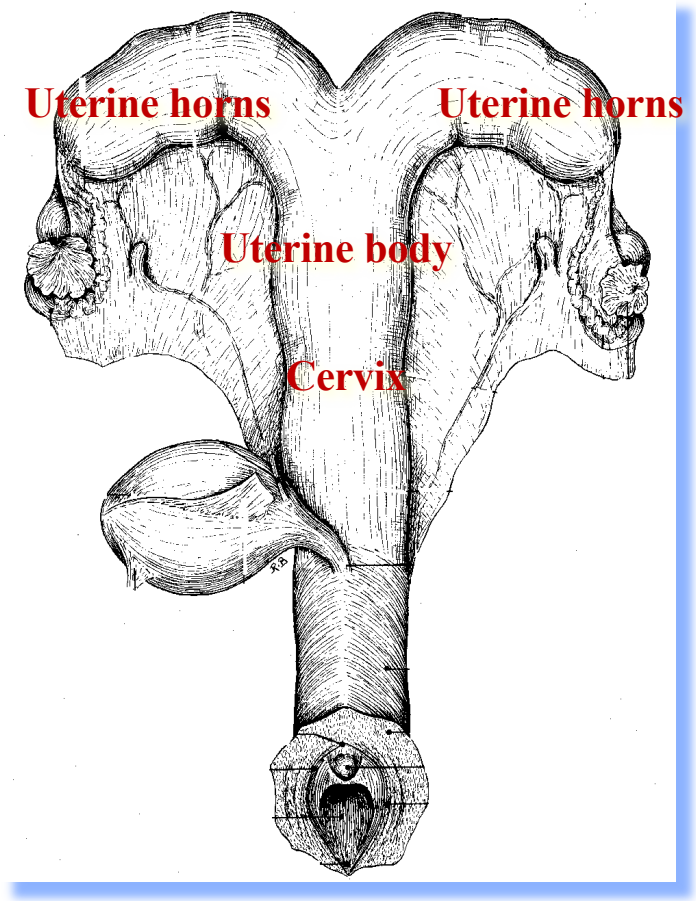
The Uterus



(a) Posterior view

The uterus: domestic animals



Functions

1. serves to receive the sperm in mares, sow, bitch

2. transports sperm from site of deposition to uterine tubes for fertilization

3. provides suitable environment for:
   a. implantation of the embryo
   b. nourishment of the embryo & fetus during pregnancy

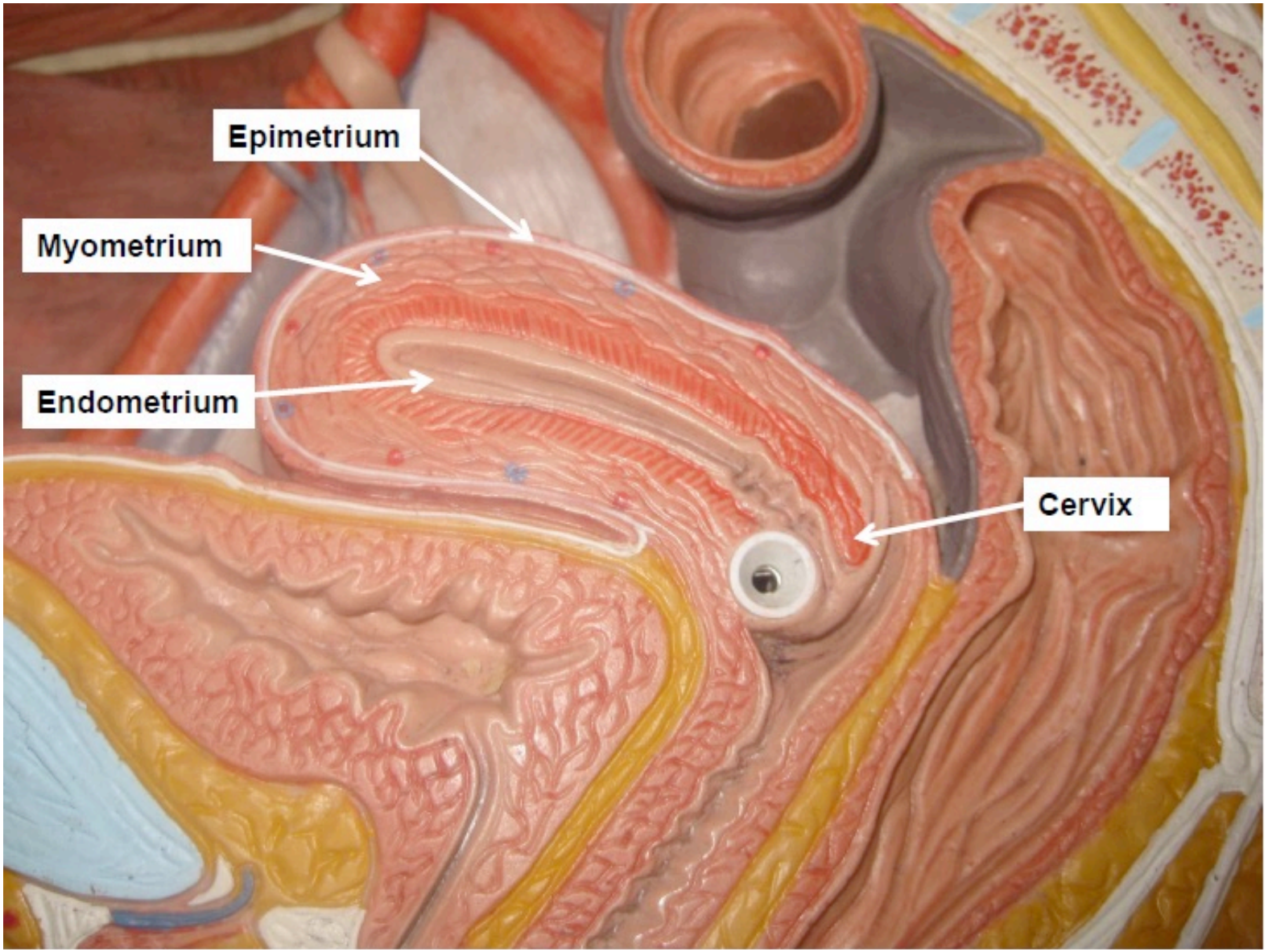
4. provides mechanical protection of the fetus

5. expels the mature fetus at the end of pregnancy

In the fundus and body of the uterus, the wall is divided into the:

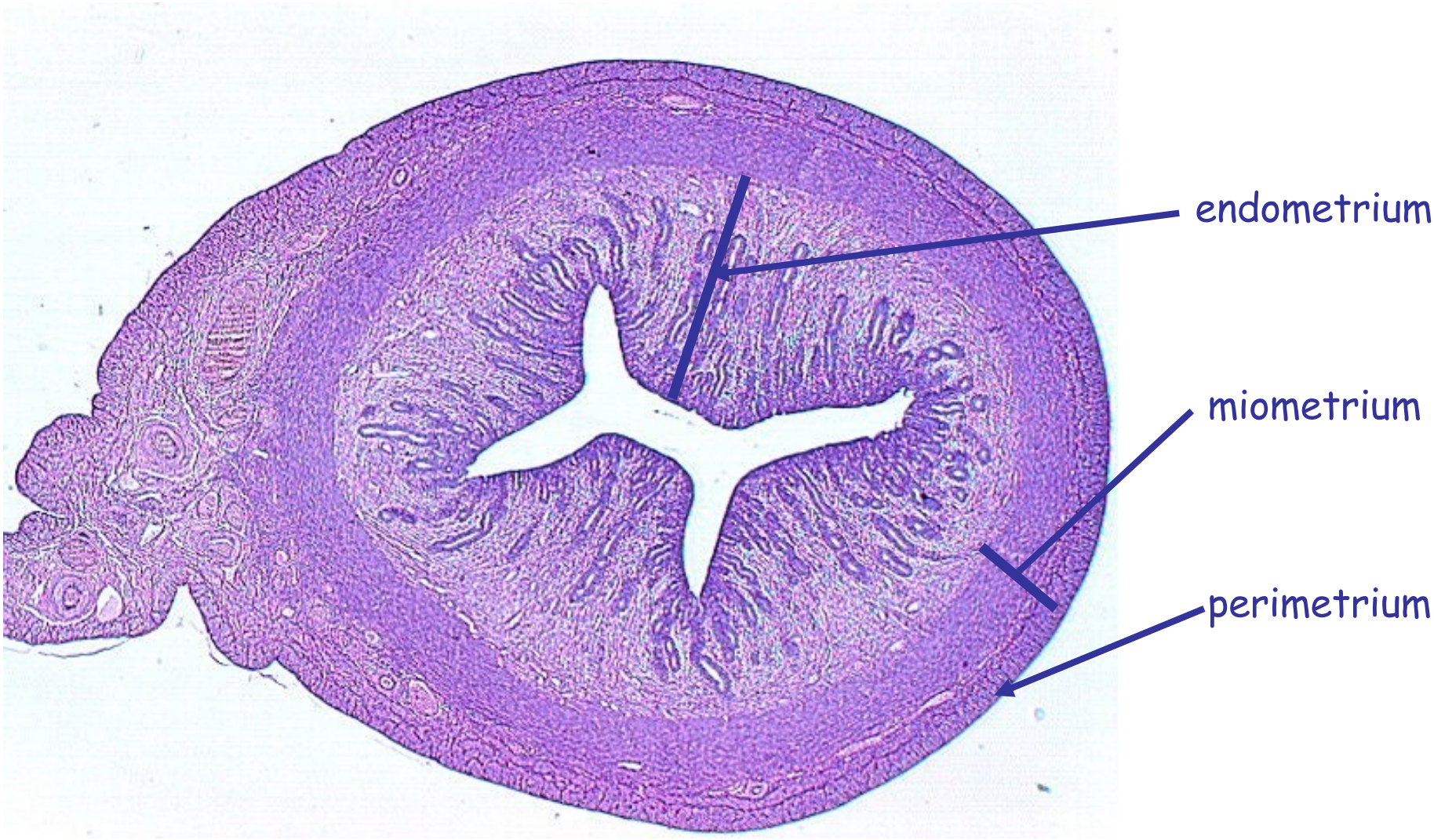
– Three layers of **Uterine wall**
  - **Perimetrium**: tunica serosa
  - **Myometrium**: tunica muscularis
  - **Endometrium**: tunica mucosa and tunica submucosa

The Uterine wall



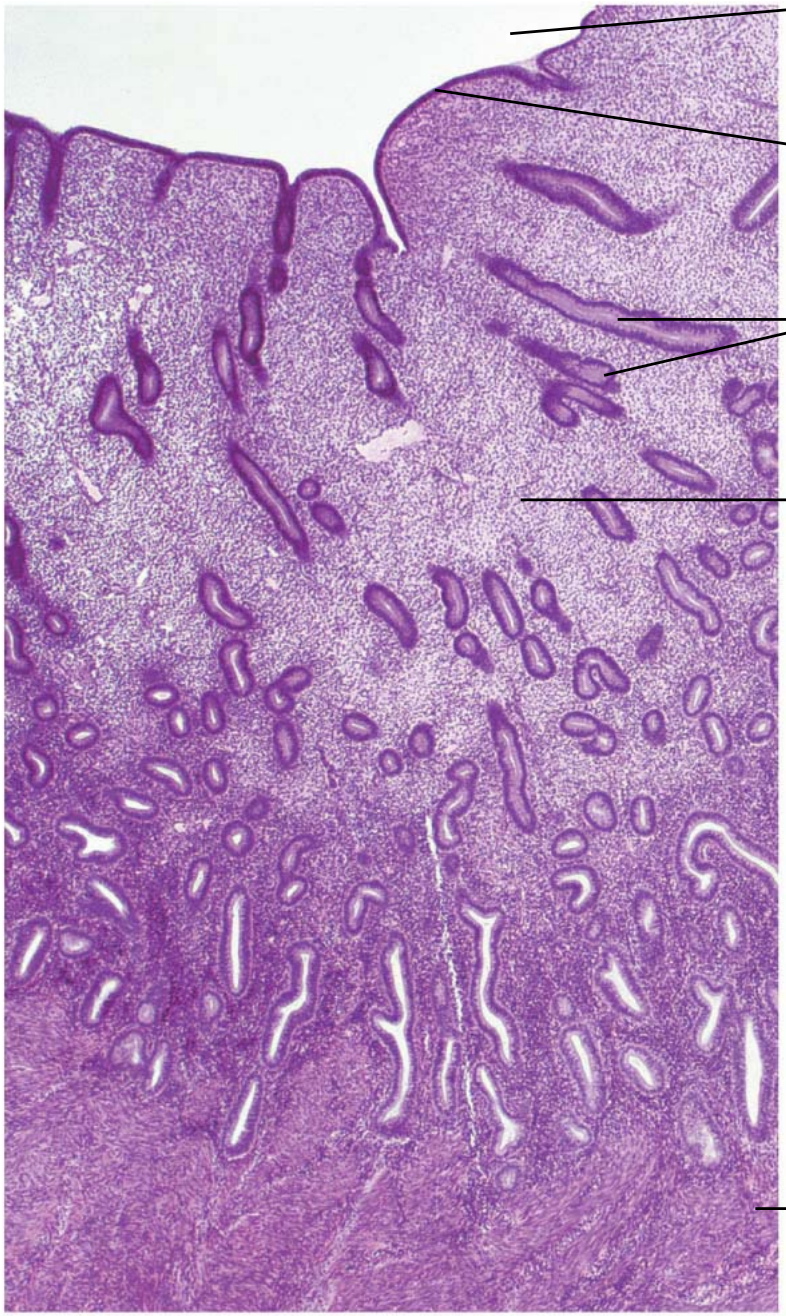
- Three layers of **Uterine wall**
  - **Perimetrium**: outermost serous layer (visceral peritoneum)
  - **Myometrium**: large middle layer consisting of smooth muscle layers
    - Contracts rhythmically during childbirth
  - **Endometrium**: mucosal lining
    - Simple columnar epithelium on top of a thick lamina propria
    - Embryo burrows into endometrium and resides there during development

UTERUS: STRUCTURE



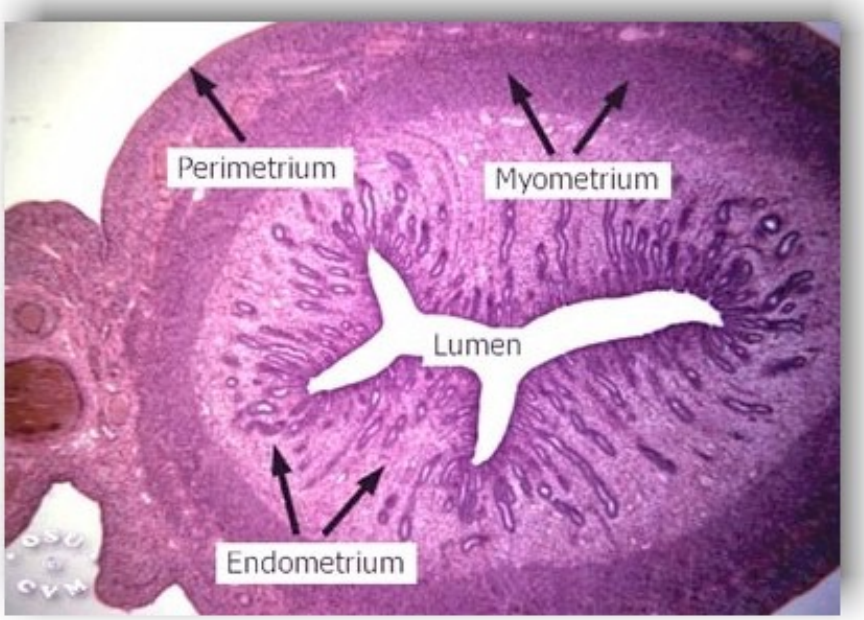
The Endometrium

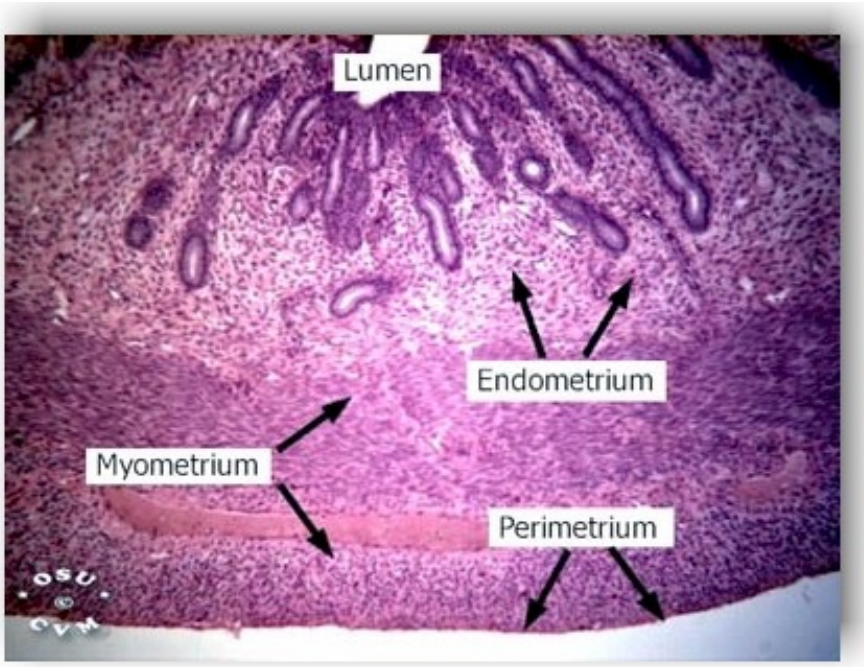
- Endometrium has two chief layers (*strata*)
  - **Stratum functionalis** (**functional layer**)
    - Changes in response to ovarian hormone cycles
    - Shed during menstruation
  - **Stratum basalis** (**basal layer**)
    - Forms new stratum functionalis after menstruation
    - Unresponsive to ovarian hormones



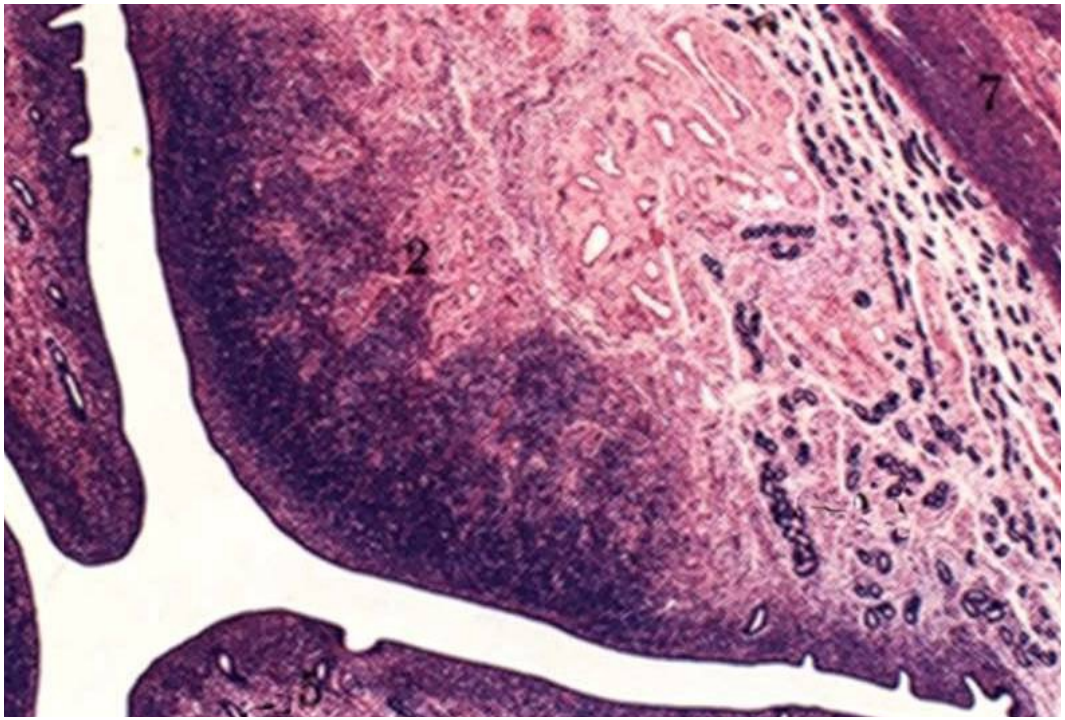
(a)

Endometrium: uterine glands

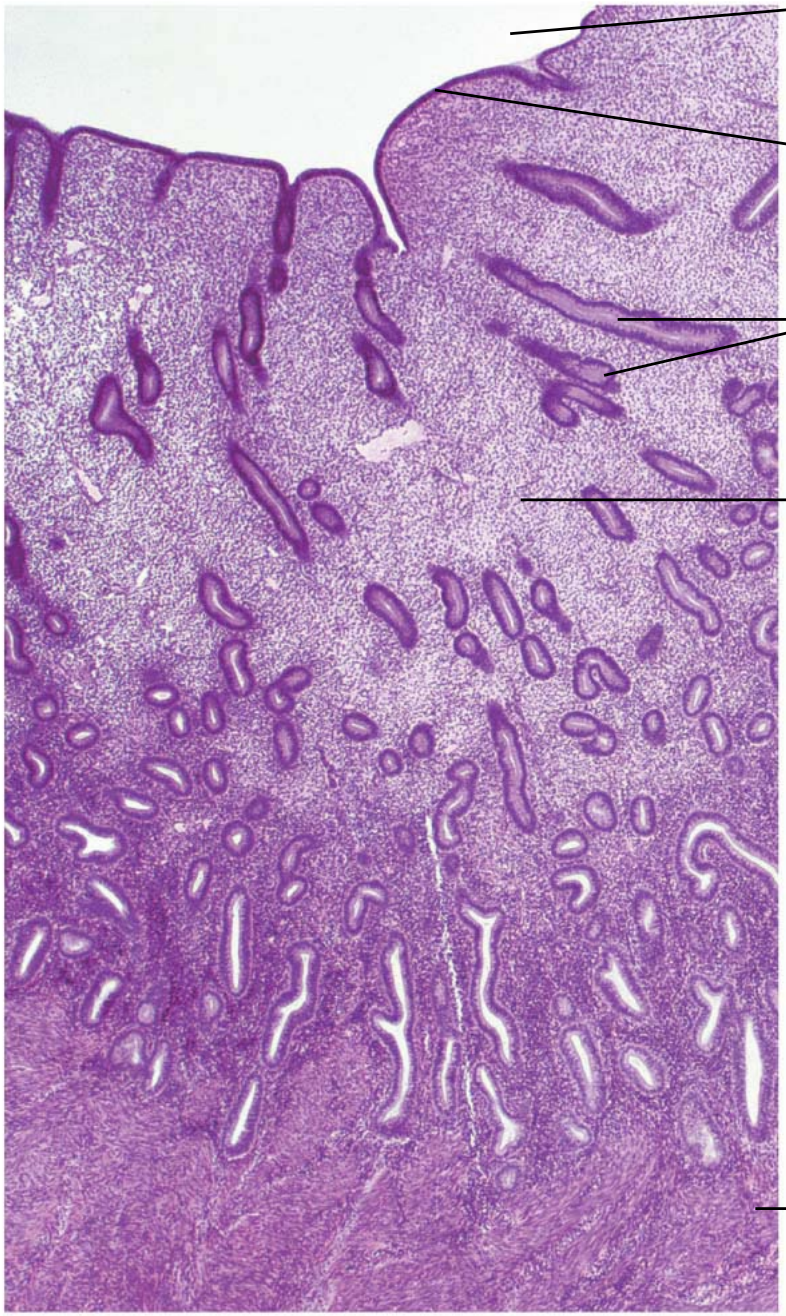




Caruncles

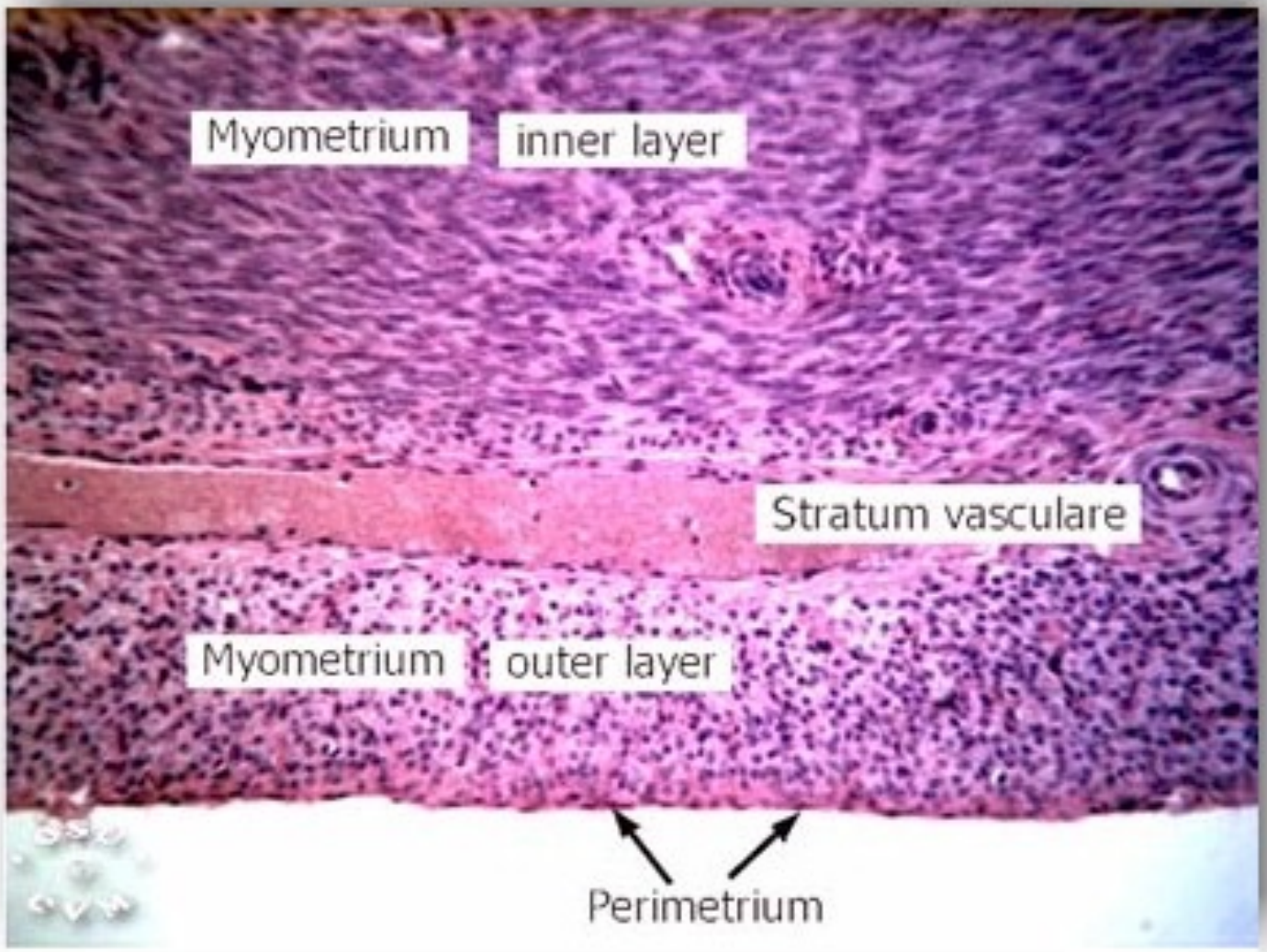


Some regions of the endometrium in ruminants are void of glands and are highly vascular. It is in these regions, called **caruncles**, that contacts between the uterus and the extraembryonic membranes are made.



(a)

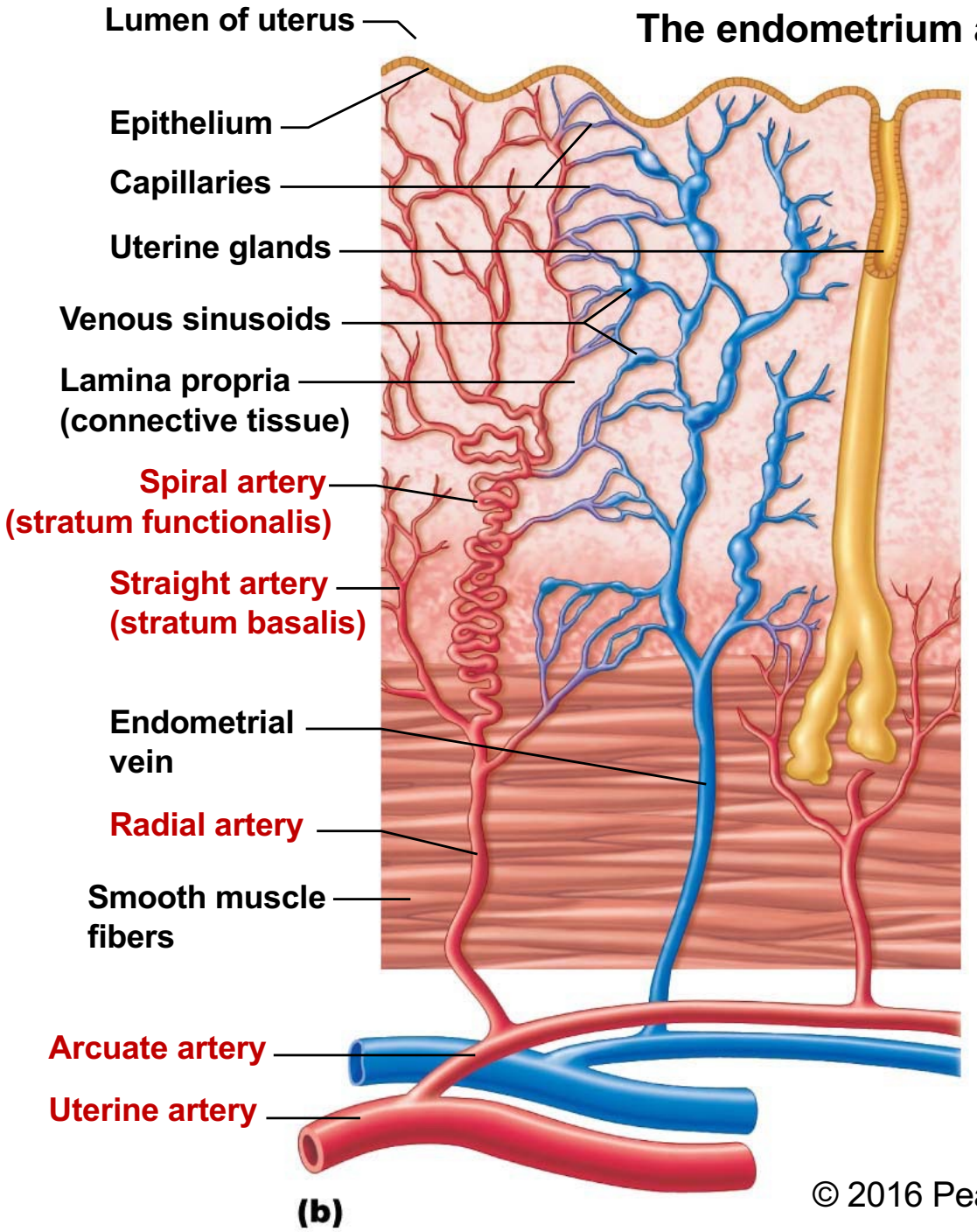
Myometrium, stratum vasculare, Perimetrium



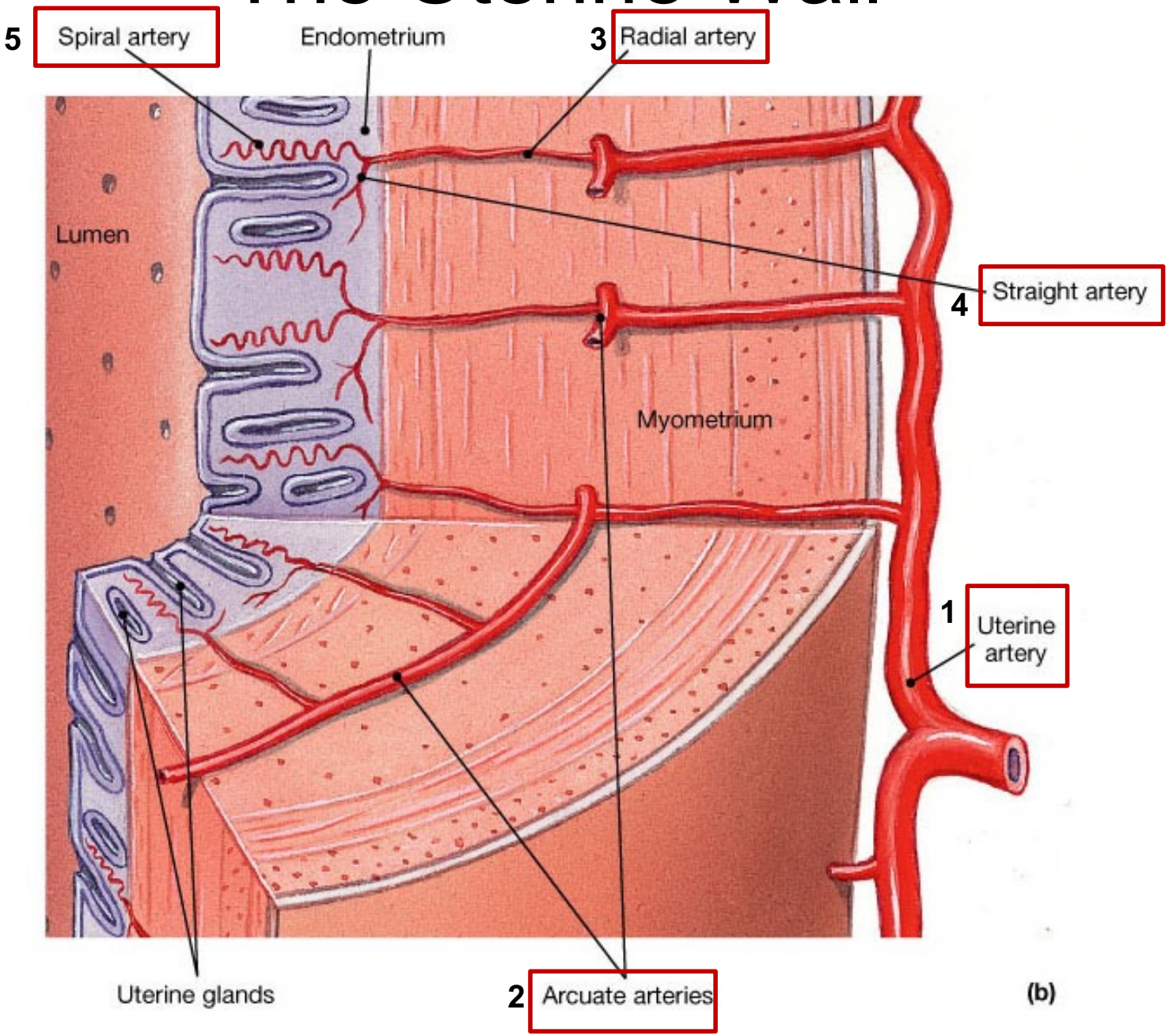
The Uterus

- Vascular supply plays key role in cyclic changes
  - **Uterine arteries** arise from *internal iliacs* and branch into:
  - **Arcuate arteries** in myometrium; branch into:
  - **Radial arteries** in endometrium; branch into:
    - **Straight arteries** in stratum basalis and
    - **Spiral arteries** in stratum functionalis
      - » Degenerate and regenerate
      - » Spasms cause shedding of functionalis layer during menstruation

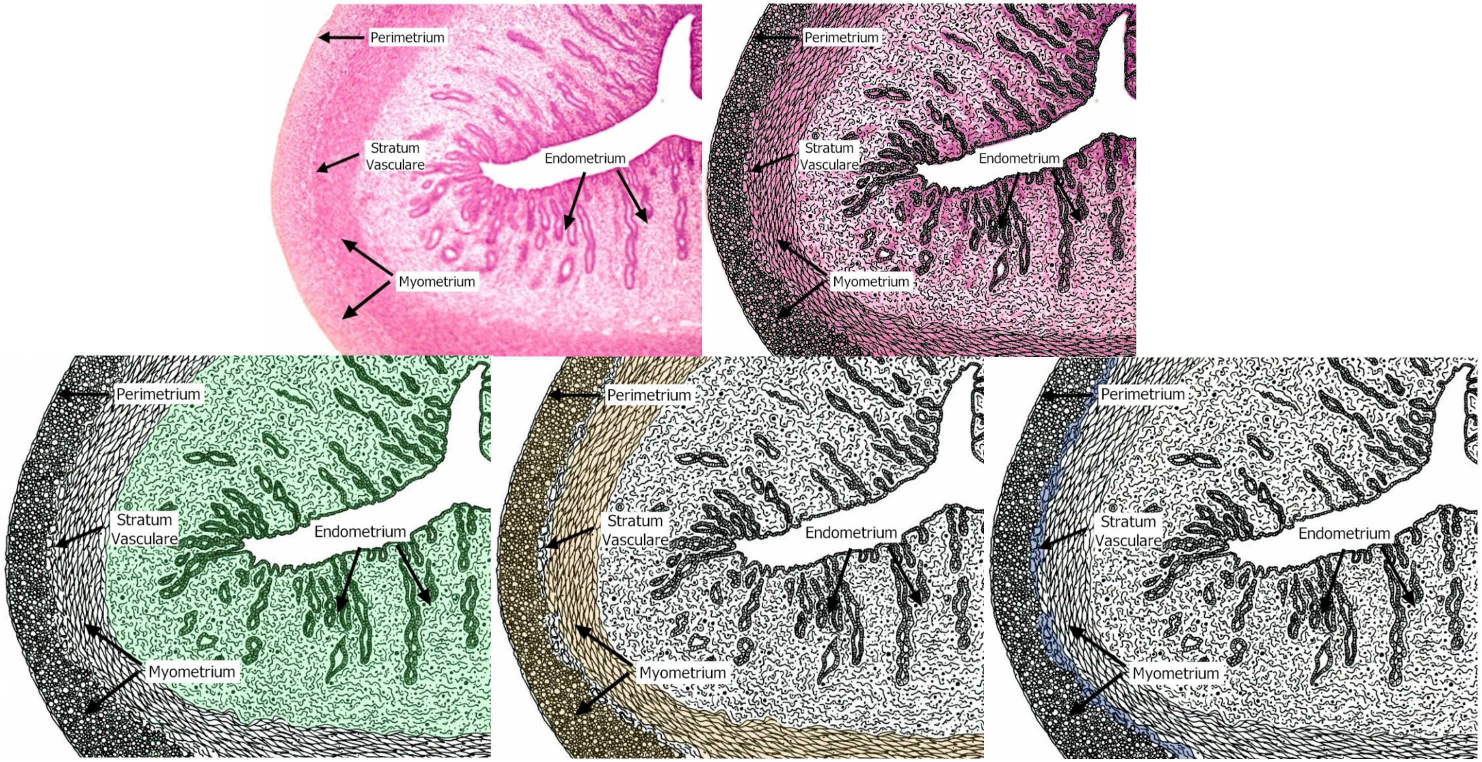
The endometrium and its blood supply.



The Uterine Wall



Menstrual and proliferative phase (Follicular Phase)

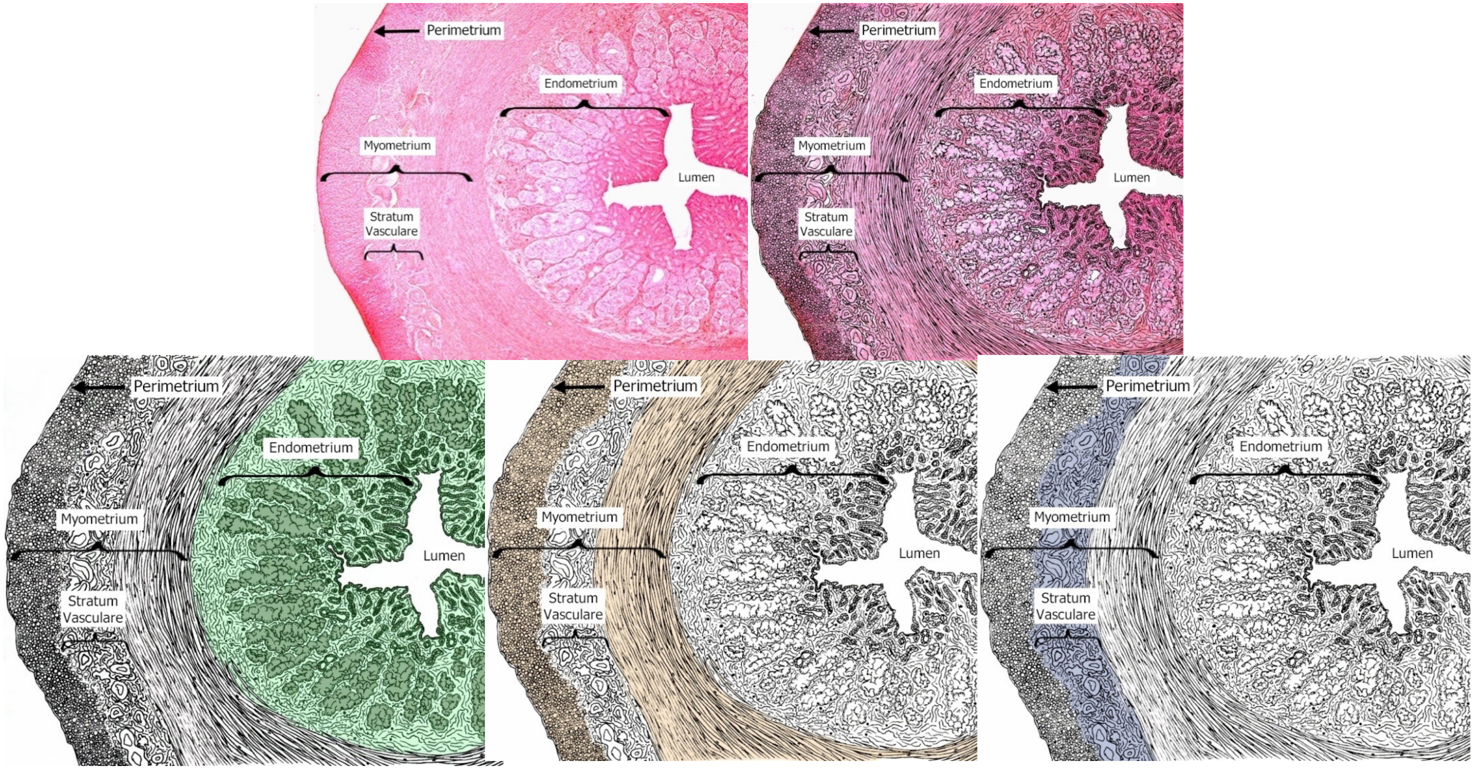


Endometrium: Uterine Glands

Miometrium

Stratum vasculare

Secretory (Luteal Phase)



Endometrium:
Uterine Glands

Miometrium

Stratum vasculare

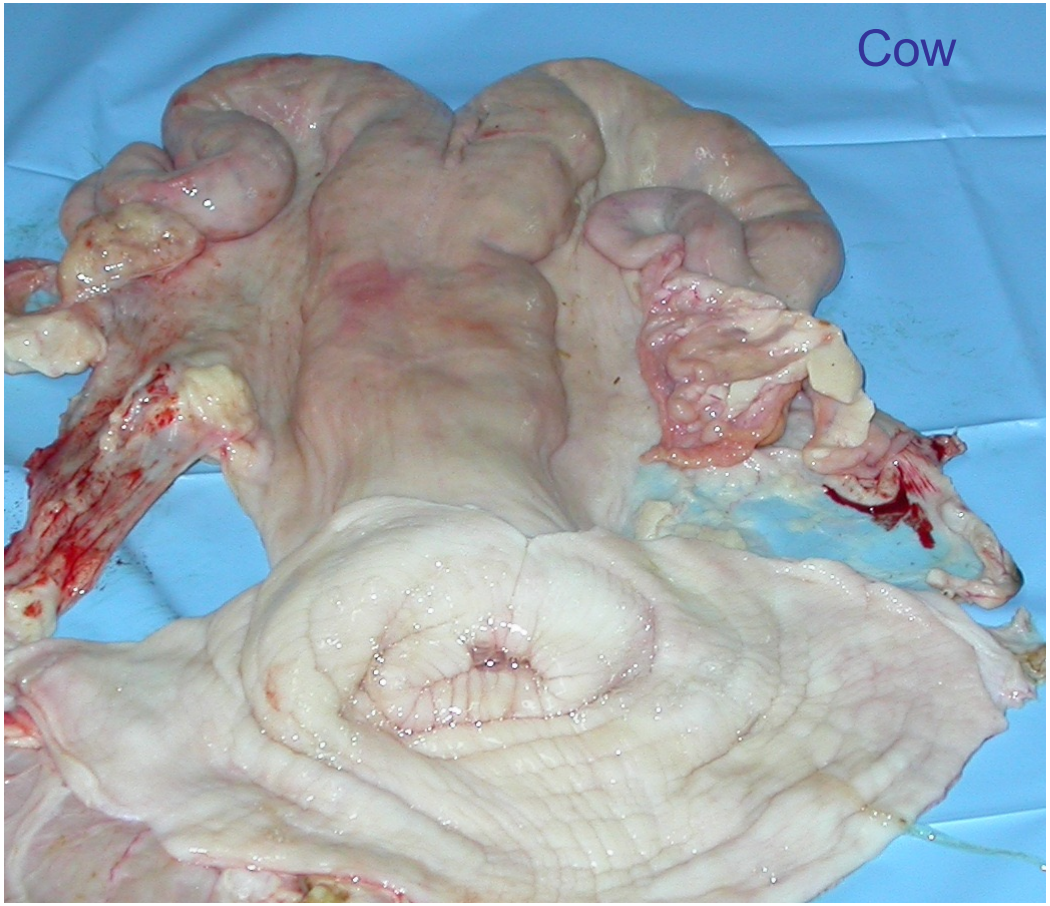
OVERT MENSTRUATION and COVERT MENSTRUATION

Overt menstruation (where there is bleeding from the uterus through the vagina) is found primarily in humans.

Covert menstruation. Females of domestic animals undergo estrous cycles, in which the endometrium is completely reabsorbed by the animal.

Some species, such as domestic dogs, experience small amounts of vaginal bleeding while approaching heat (estrus); this discharge has a different physiologic cause than menstruation.

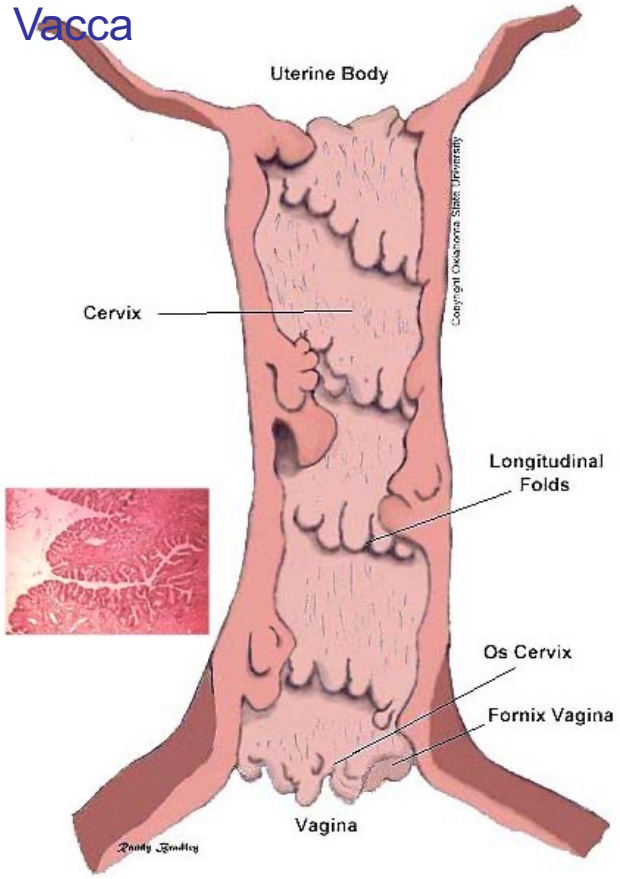
CERVIX

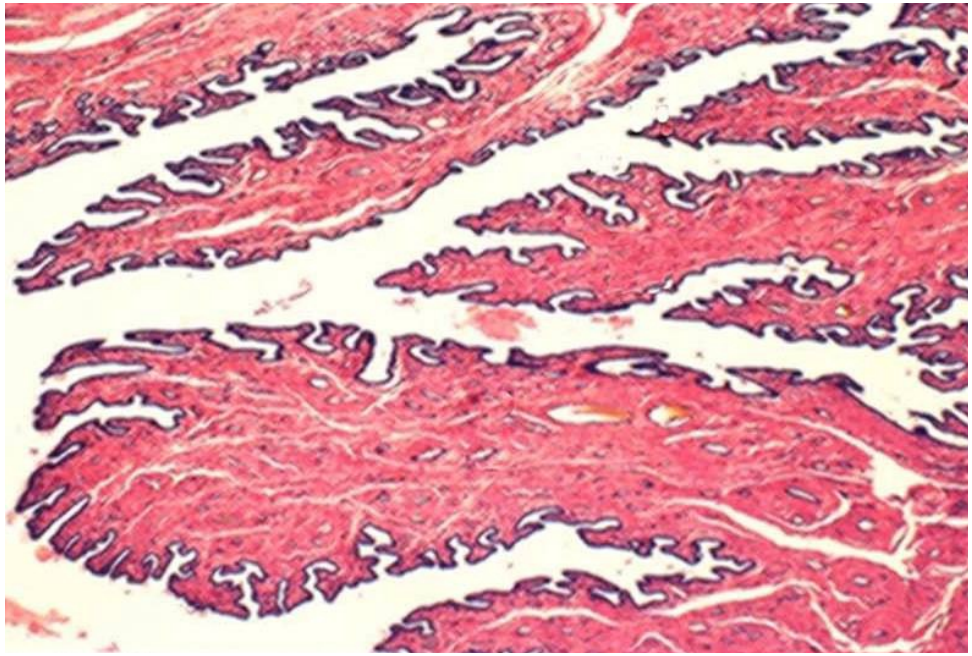


Neck of the uterus

CERVIX: structure

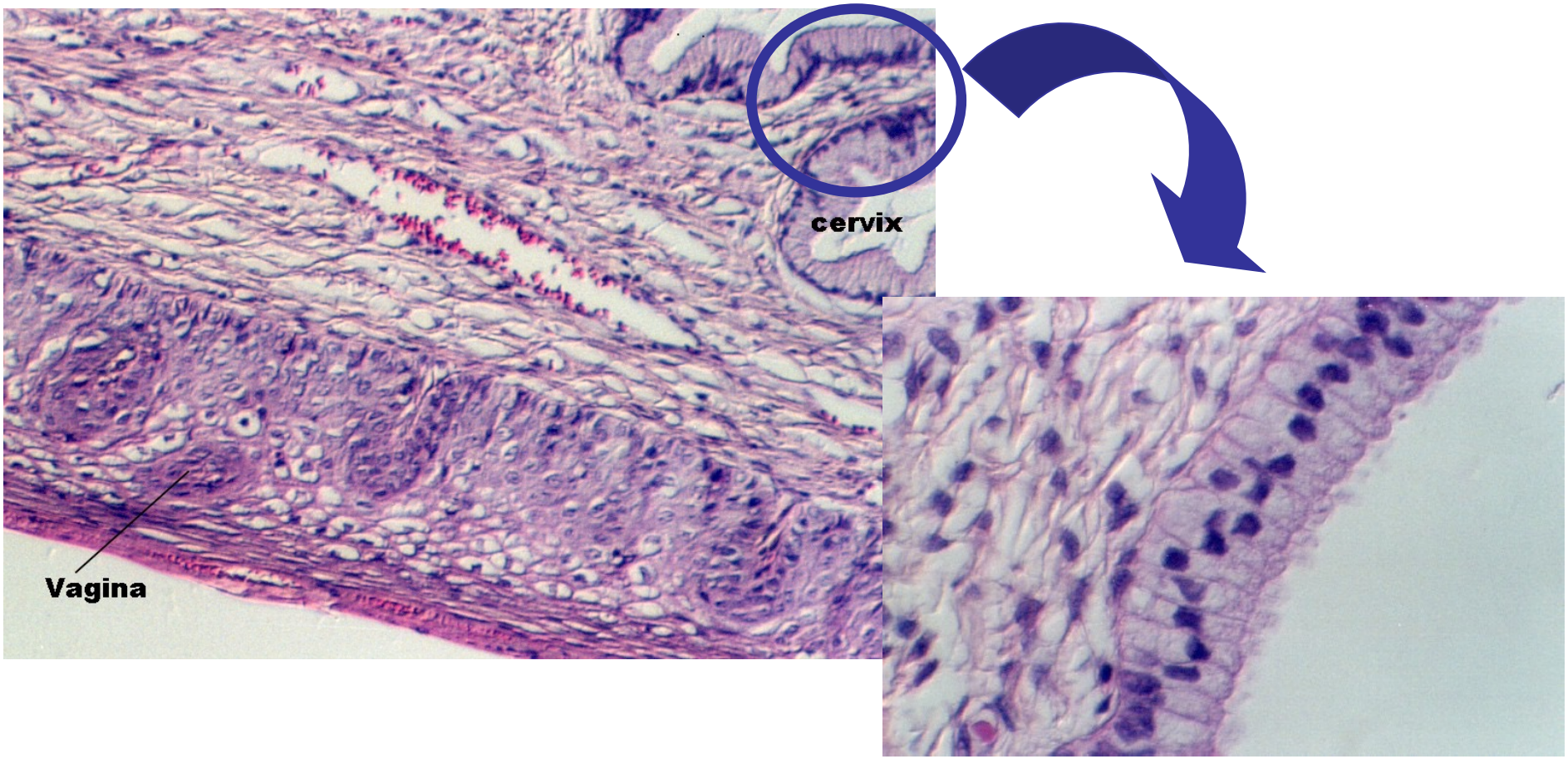
Vacca





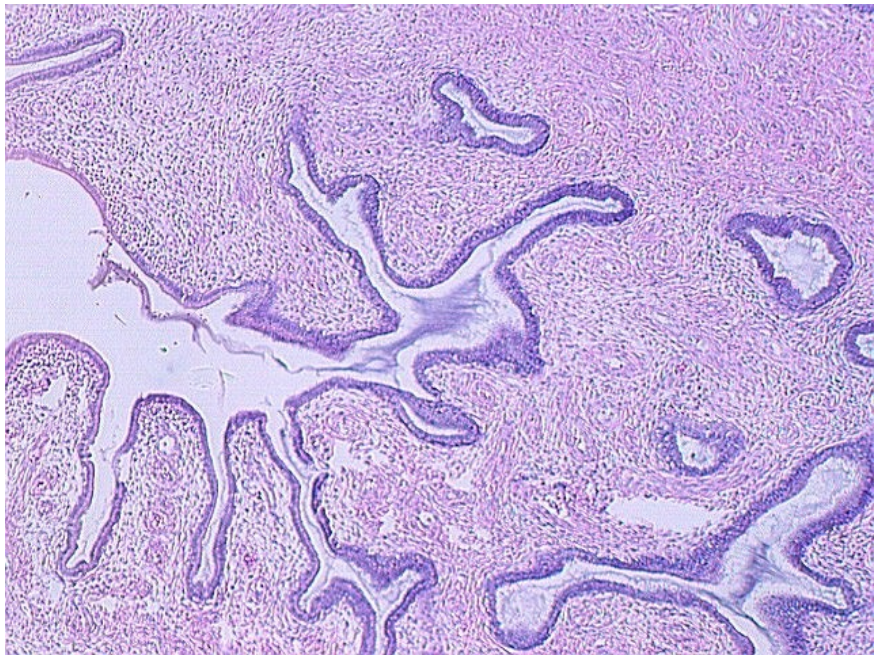
It has repetead folds

CERVIX: mucosa

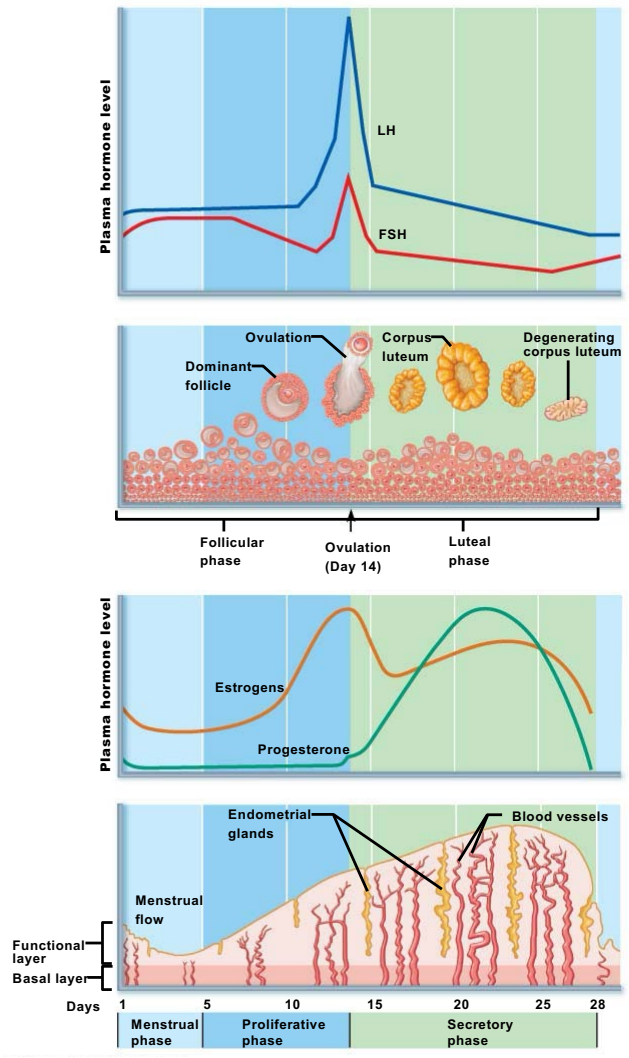


The epithelium of the upper two-thirds is **cylindrical** and **ciliated**, but below this gradually changes to **stratified squamous epithelium** close to the external orifice.

CERVIX: mucosa



In the upper two-thirds of the canal, the mucous membrane is provided with numerous deep glandular follicles, which secrete a clear viscid alkaline mucus.



Correlation of anterior pituitary and ovarian hormones with structural changes of the ovary and uterus.

Both the **menstrual and proliferative phases** occur before ovulation, and together they correspond to the **follicular phase** of the ovarian cycle.

The **secretory phase** corresponds in time to the **luteal phase** of the ovarian cycle.