This Pre-lab Guide acts as an addendum to the information on female reproductive anatomy presented to you by Khan Academy:

https://www.youtube.com/watch?v=ATggNmJEqXw

This material is on your wordlist!
V. Female Repro Anatomy

– In lab, stick to your wordlist!

A) Ovary - Produces eggs and hormones

- Functional Anatomy:
  * Tunica albuginea capsule, like we saw on the testes.
  * Cortex produces gametes; medulla holds vessels.
  * Each egg develops in its own fluid-filled follicle and is released by the Graafian follicle during ovulation.
  * Closer look in “histology” section.

B) Genital Tract – Uterine tubes, Uterus and Vagina

- The female genital tract collects the ovum released from the Graafian follicle and serves as the site of its potential fertilization and development into a fetus.

  * Throughout the tract, we see an inner mucosal lining, a muscular layer, and an outer connective tissue layer.

1. The oviducts (uterine tubes or fallopian tubes) - transport the ovum from the ovary to the uterus and serve as the site of fertilization.

- The epithelium of the tubes contains ciliated cells that move the ovum along and non-ciliated secretory cells that nourish and protect it.

- Divided into three parts:
  * Infundibulum - during ovulation, the fimbriae “pulse”, helping to draw in the ovum.
  * Ampulla – where most fertilization occurs
  * Isthmus – tube connecting it to uterus
2. **Uterus** - site of implantation, and produces labor. Its structure changes considerably based upon the stage of the menstrual cycle.

- Thick-walled, pear-shaped muscular chamber
- Openings into uterine tubes in two upper corners.
- **Fundus** – domed area above body of organ.
- **Histology of Uterine Wall** – three layers:
  - **Perimetrium** - external serosa layer.
  - **Myometrium** - middle smooth muscular layer
    - Produces labor contractions, expels fetus.
  - **Endometrium**
    - Simple columnar epithelium with thick layer glands with 2 distinct layers:
      1. **Stratum functionalis** – superficial, shed each period.
      2. **Stratum basalis** - deep layer, not menstruated, regenerates a new stratum functionalis with each menstrual cycle.

**Uterine structural changes occurring throughout the menstrual cycle is covered in detail in the lecture.**

3. The vagina is the site of entry for the spermatozoa and exit for the fetus.

   * 8-10 cm distensible muscular tube
   * Allows for discharge of menstrual fluid, receipt of penis, semen and birth of baby
   * As all of these organs: Outer adventitia, middle muscularis and inner mucosa

   The stratified squamous epithelium is notable for its production of glycogen, which is broken down into lactic acid as a defense mechanism against pathogens.

   * Urethra embedded in its anterior wall.
4. Cervix - junction between the uterus and vagina.

* Long canal with a fornix and an internal and external os (openings).

* Protects the uterus and upper genital tract from bacterial invasion - underlying the epithelium is a great deal of collagenous tissue containing numerous leukocytes.

* Produces cervical mucus that changes in consistency during the menstrual cycle to prevent or promote pregnancy.

* During childbirth, the cervix dilates widely to allow the baby to pass through.
C) Vulva - the external female sex organs.

The vulva includes:

- Mons pubis
- Labia majora
- Labia minora
- Clitoris (sagittal and lateral view)
- Urinary meatus
- Greater and lesser vestibular glands
- The vaginal opening.
- Vestibular bulb and gland (put the model together to see)
D) Associated Support Structures: the ligaments

The ligaments of the female reproductive tract are a series of structures that support the internal female genitalia in the pelvis.

The ligaments of the female reproductive tract can be divided into three categories:

1. Broad ligament – a sheet of peritoneum, associated with both the uterus and ovaries. Subdivided, but we will not go into that in lab.

2. Uterine ligaments – ligaments primarily associated with the uterus.

   We will just look at the round ligament.

3. Ovarian ligaments – ligaments primarily associated with the ovaries.

   The Ovarian Ligament

   Connects the ovary to the side of the uterus. Lies right next to the uterine tube, so be careful!

   The Suspensory Ligament of Ovary

   Extends outwards from the ovary to the lateral abdominal wall.
E) Model of Pregnant Uterus

You do not need to identify the stages of pregnancy of each model. Focus on first month, second month, and seventh month. We’ll be looking at the changes in the placenta, the uterus (and its layers), and the umbilical cord.

Model of pregnant uterus:

- Amniotic sac
- Body of uterus
- Cervix of uterus
- Endometrium
- Fallopian (uterine) tube
- Fetus
- Fimbriae
- Fundus of the uterus
- Myometrium
- Ovary
- Perimetrium
- Placenta
- Umbilical cord

- 1st Month Embryo
- 2nd Month Embryo
- 3rd Month Embryo
- 4th Month Fetus (Transverse Lie)
- 5th Month Fetus (Breach Position)
- 5th Month Fetus (Transverse Lie)
- 5th Month Twin Fetuses (Normal Position)
- 7th Month Fetus (Normal Position)
VI. Female Reproductive Histology: The Ovary

The ovary is the female gonad and the site of gamete formation (oogenesis) and steroid productions.

The ovary produces and releases oocytes.

Ova are mature (haploid) gametes that finish their formation in the oviduct (i.e., outside of the ovary) after fertilization.

The ovary also produces 2 groups of steroid hormones:
1. estrogens – stimulate growth and maturation of the female reproductive system
2. progesterone – prepare reproductive system for pregnancy; produced by corpus luteum

The medulla consists of loose connective tissue, blood vessels, nerves and lymphatics. The cortex contains the ovarian follicles. Surrounding the cortex is a connective tissue capsule called the tunica albuginea.

During the female’s reproductive years, one primordial follicle (usually) per menstrual cycle completes maturation and ovulates (exits the ovary). Each developing follicle consists of an oocyte surrounded by a sphere of follicular cells which surround and support the oocyte.

Developing follicles can be classified into 3 developmental stages:

(1) A primary ovarian follicle is an immature follicle consisting of an oocyte surrounded by a single layer of tall, supporting granulosa cells.

(2) Secondary or antral follicles are marked by the appearance of an antrum within the stratum granulosum. This is a fluid-filled cavity rich in hyaluronic acid.

(3) The mature (Graafian) follicle is larger yet. It includes the theca folliculi, an outer shell of cells that secretes androgens which are converted to estrogen by the follicular cells. After ovulation, the ovum and the cells directly surrounding it will enter the oviduct. The other cells become the Corona radiata and the Zona Pellucida (more in lecture).

The corpus luteum (Latin for "yellow body"; plural is "corpora lutea") is a temporary endocrine structure in female ovaries that is involved in the production of relatively high levels of progesterone, among other things. It is the remains of the mature follicle after ovulation. If the egg is not fertilized, the corpus luteum stops secreting progesterone and decays (after approximately 10 days in humans). It then degenerates into a corpus albicans, which is a mass of fibrous scar tissue.