Female Reproductive Organs
Ovary

- **Function**
  - Female gonad responsible for the production of gametes and hormones

- **Location**
  - Paired organs located in the lateral wall of the pelvic cavity

- **Structure**
  - **Surface epithelium**
    - Aka Germinal epithelium
      - Modified peritoneum
      - Low cuboidal epithelium
  - **Tunica Albuginea**
    - Dense irregular connective tissue
  - **Cortex**
    - Composed of connective tissue
    - Contains ovarian follicles in various stages of development
    - **Primordial follicles**
      - Single layer of flattened (squamous) follicular cells
      - Separated from stroma by a basement membrane
      - Primary oocyte
        - Arrested in prophase I
    - **Primary follicles**
      - Unilaminar
        - Single layer of cuboidal follicular cells
      - Multilaminar
        - Stratified cuboidal layer of follicular cells
          - Follicular cells now termed granulosa cells
            - Produce estrogen from androstenedione
        - Zona pellucida
          - Separates oocyte from follicular cells
        - Theca interna
          - From stromal cells
          - Contain LH receptors
          - Produce androstenedione
        - Theca externa
          - Fibrous connective tissue
    - **Secondary follicles**
      - Similar features to the multilaminar primary follicle
      - Presence of liquor folliculi or antrum indicates secondary follicle
Fluid with GAGs, proteoglycans, steroid-binding proteins, hormones and growth factors

- Cumulus oophorus
  - Small group of granulosa cells surrounding the primary oocyte

- Corona radiata
  - Single layer of granulosa cells adjacent to the zona pellucida

  **Graafian follicles**
  - Mature follicle
  - Similar features to secondary follicle but larger
  - Completes first meiotic division to form a secondary oocyte

- Corpus luteum
  - After ovulation of secondary oocyte
  - Collapse of granulosa cells and thecal layers
  - Endocrine gland
    - Progesterone and estrogen
  - Present for 10-12 days

- Corpus albicans
  - Remnant of corpus luteum
  - Dense connective tissue “scar”

- Medulla
  - Richly vascularized fibroelastic connective tissue

- Cells
  - Connective tissue cells (i.e. fibroblasts)
  - Interstitial cells
    - Secrete estrogens
  - Hilar cells
    - Secrete androgens

- **Video recording**
  - Ovary

- **Microscope images**
  - 4x
  - 10x
Uterine Tubes

- **Function**
  - Act as a conduit for spermatozoa to reach the oocyte and convey the fertilized egg to the uterus

- **Location**
  - Paired muscular tubes continuous with the uterus at their attached end and open into the peritoneal cavity near the ovary at their free end
  - Three regions: infundibulum, ampulla, isthmus

- **Structure**
  - **Mucosa**
    - Many longitudinal folds
    - Simple columnar epithelium
      - Nonciliated peg cells
        - Secretory products provide nutritive and protective environment for maintaining spermatozoa and traveling ovum
        - Darker staining cells whose apical end bulges into the lumen
    - Ciliated cells
      - Facilitate movement toward uterus
  - **Muscularis**
    - Poorly defined inner circular and outer longitudinal layer of smooth muscle
  - **Serosa**
    - Simple squamous epithelium (mesothelium)
    - Covered with visceral peritoneum

- **Video recording**
  - Uterine Tubes

- **Microscope images**
  - 4x
  - 10x
  - 40x
Uterus

• **Function**
  - A hollow muscular organ responsible for implantation and growth of a fertilized ovum

• **Location**
  - Located in midline pelvis between the rectum and urinary bladder
  - Three regions: body, fundus and cervix

• **Structure: Uterus (body and fundus)**
  - **Endometrium**
    - Simple columnar epithelium
      - Nonciliated secretory columnar cells
      - Ciliated columnar cells
    - Stratum functionalis
      - Superficial layer
      - Sloughed at menstruation
      - Spiral arteries
    - Stratum basalis
      - Regenerate stratum functionalis during the proliferative phase
      - Straight arteries
    - Lamina propria
      - Dense irregular connective tissue
    - Endometrial glands
      - Provide nutrients for fetal implantation
      - **10x**
      - **40x**
  - **Myometrium**
    - Smooth muscle
      - Inner longitudinal layer
      - Middle circular layer
      - Outer longitudinal layer
  - **Perimetrium**
    - Anteriorly covered with adventitia (retroperitoneal)
    - Majority covered in serosa
      - Simple squamous epithelium (mesothelium)
      - Resting on areolar connective tissue

• **Structure: Cervix**
  - **Epithelium**
    - Simple columnar epithelium (lumen)
      - Mucus secreting
    - Nonkeratinized stratified squamous epithelium (external surface)
• Video recording
  o Uterus

• Microscope images
  o See above for specific structures

- Wall
  - Dense, collagenous connective tissue with few smooth muscle fibers
Vagina

- **Function**
  - Provides a passageway for delivery of an infant and menstrual flow.
  - Female organ of copulation

- **Location**
  - Lies between the urinary bladder and rectum. Extends from the cervix to the body exterior.

- **Structure**
  - Mucosa
    - Nonkeratinized stratified squamous epithelium
    - Lamina propria
      - Loose fibroelastic connective tissue
  - Muscularis
    - Circular and longitudinal bundles of smooth muscle
  - Adventitia
    - Dense fibroelastic connective tissue

- **Video recording**
  - Vagina

- **Microscope images**
  - 4x
  - 10x
Mammary gland

- **Function**
  - Produce and secrete milk to nourish a newborn

- **Location** (bilateral)
  - Lateral border of the sternum to the midaxillary line
  - Vertically 2nd through 6th rib

- **Structure**
  - Modified apocrine sweat glands
  - 15-25 lobes (compound tubuloalveolar)
    - Each lobe is separated by bands of dense connective tissue and adipose tissue
      - Suspensory ligament – connects to dermis
    - Ductal system
      - Alveolar epithelial cells
        - Secretory units
        - Cuboidal or columnar epithelium
        - Myoepithelial cells
      - Intralobular duct
        - Simple cuboidal to low columnar epithelium
        - Myoepithelial cells
      - Interlobular duct
        - Simple cuboidal to low columnar epithelium
        - Myoepithelial cells
      - Lactiferous duct
        - Stratified columnar epithelium
          - Basal cells – cuboidal
          - Superficial cells – columnar
      - Lactiferous sinus
        - Reservoir for milk
  - Active mammary gland
    - Same structure as above
    - Lobules are larger
    - Alveoli filled with proteinacious fluid – milk
    - Less stroma

- **Video recording**
  - Inactive mammary gland
  - Active mammary gland
- **Microscope Images**
  - Inactive mammary gland
    - 4x
    - 10x
    - 40x
  - Active mammary gland
    - 4x
    - 10x
    - 40x
ENDOMETRIAL GLANDS 10X
ENDOMETRIAL GLANDS 40X
INACTIVE MAMMARY GLAND 40X