Female external genitalia (vulva). The vulva refers to those parts that are outwardly visible.

- **Mon pubis**: fat tissue mound
- **Clitoris**: erectile tissue of female reproductive system
- **Labia majora**: outer lips
- **Labia minora**: inner lips
- **Urinary**: opening
- **Vaginal**: opening
- **Hymen**: mucous membrane covering opening to vagina

**Vestibule** is an area enclosed within the labia minora as marked by the blue diamond ring. This area covers the vaginal & urinary openings, hymen, Bartholin’s glands, clitoris & prepuce.

Greater vestibule gland: Bartholin’s Gland (female) = Bulbo-urethral Gland (male)
Multilaminar Primary Follicle

- Proliferated granulosa cells (multi-layers) will thicken the follicle as to protect the oocyte (ovum).
# Parts of the Uterus

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fundus</strong></td>
<td>The dome-shaped portion that lies superior to the entry point of the uterine tubes.</td>
</tr>
<tr>
<td><strong>Body</strong></td>
<td>The main, pear-shaped part of uterus.</td>
</tr>
<tr>
<td><strong>Cervix</strong></td>
<td>The narrow neck of the uterus that protrudes into the vagina inferiorly. It has a narrow canal running through it, connecting the cavity of the uterus to that of the vagina. The upper opening is called the internal os, and the lower opening the external os.</td>
</tr>
</tbody>
</table>
BREAST (MAMMARY GLAND)
Mammary gland ducts leave lobules, converge, and form single lactiferous duct in each lobe.
Ovary

Cortex

- Contains follicles
- These follicles contain oocytes in various stages of development
- Also function to secrete the hormone estrogen
Ovary Cortex

• **Primary follicles**
  - The follicular cells are surrounded by *granulosa cells*
  - As these follicles mature, they *secrete follicular fluid* into the follicle
  - These follicles become the *secondary follicles*
The Uterine (Fallopian) Tube

- Its lumen is lined with ciliated columnar epithelium
- The wall is made up of smooth muscle
- The fertilized ovum is moved down the uterine tube to the uterus by:
  - The beating (movement) of the cilia
  - The contraction of the smooth muscle (peristalsis)
REPRODUCTIVE CYCLE
MENSTRUAL CYCLE

• Proliferative (pre-ovulatory) phase
  • Days 6-14
  • Endometrium rebuilds itself
• Secretory (post-ovulatory) phase
  • Days 15-28
  • Endometrium prepares for implantation of the embryo
Menopause

- Ovulation and menses cease entirely.
- Without sufficient estrogen, reproductive organs and breasts atrophy.

- Irritability and depression result.
- Skin blood vessels undergo intense vasodilation (hot flashes occur).
- Gradual thinning of the skin and bone loss.

- Males have no equivalent to menopause.
Lactation

• Colostrum
• First milk
• Released the first 2–3 days
• Followed by true milk production
• Solution rich in vitamin A, protein, minerals, and IgA antibodies
• Each follicle consists of:
  • An immature egg called an oocyte
• Cells around the oocyte are called:
  • Follicle cells (one cell layer thick)
  • Granulosa cells (when more than one layer is present)
• Primordial follicle – one layer of squamous like follicle cells surrounds the oocyte
• Secondary follicle – two or more layers of cuboidal granulosa cells enclose the oocyte
UTERUS (CONT’D):
• Cervix – narrow neck which projects into the vagina inferiorly
• Cervical canal – cavity of the cervix that communicates with:
  • The vagina via the external os
  • The uterine body via the internal os
• Cervical glands secrete mucus that covers the external os and blocks sperm entry except during midcycle
Uterine Wall

- Composed of three layers
  - Perimetrium — outermost serous layer; the visceral peritoneum
  - Myometrium — middle layer; interlacing layers of smooth muscle
  - Endometrium — mucosal lining of the uterine cavity
Endometrium

• Has numerous uterine glands that change in length as the endometrial thickness changes.

• Stratum functionalis:
  • Undergoes cyclic changes in response to ovarian hormones.
  • Is shed during menstruation.

• Stratum basalis:
  • Forms a new functionalis after menstruation ends.
  • Does not respond to ovarian hormones.
Vulva (cont’d)

• Greater vestibular glands
  • Pea-size glands flanking the vagina
  • Homologous to the bulbourethral glands
  • Keep the vestibule moist and lubricated
• Clitoris (homologous to the penis)
  • Erectile tissue hooded by the prepuce
  • The exposed portion is called the glans
PREGNANCY AND HUMAN DEVELOPMENT
From Egg to Embryo

- **Pregnancy** – events that occur from fertilization until the infant is born
- **Conceptus** – the developing offspring
- **Gestation period** – from the last menstrual period until birth
(a) Cleavage of zygote, two-cell stage (day 1)

(b) Cleavage, four-cell stage (day 2)

(c) Morula (day 4)

(d) Blastocyst, external view (day 5)

(e) Blastocyst, internal view (day 5)

Figure 29-2 Principles of Anatomy and Physiology, 11/e © 2006 John Wiley & Sons
- Endometrium
- Uterine endometrial epithelium
- Inner cell mass
- Trophoblast
- Blastocyst cavity
- Lumen of uterus
Fetal Development
Gastrulation

• The blastocyst is transformed into a gastrula:
• The formation of three germ layers which comprise the early embryo:
  • Ectoderm
  • Mesoderm
  • Endoderm
Undifferentiated stage (about five-week embryo)

**Male development**

- Glans area
- Urethral folds
- Urethral groove
- Labioscrotal swelling
- Urogenital sinus
- Perineum
- Anus

**Female development**

- Glans penis
- Clitoris
- Urethral folds
- Labioscrotal swelling
- Perineum
- Anus

**Ten-week embryo**

- Glans penis
- Penis
- Scrotum

**Near birth**

- Labia majora
- Labia minora
- Vaginal orifice
- Clitoris
- External urethral orifice
- Vestibule
- Anus

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STEM CELL

- In particular, many stem research projects target diseases affecting the nervous system.
- Because nerve cells have not the ability to regenerate if damaged or die due to old age.
- Stem cell research is taboo.
- Because it is unethical, involving religious issues.
- Many groups in Western countries strongly oppose stem cell research.
• **Endometriosis**

• the most common gynecological diseases

• In this disease a specialized type of tissue that normally lines the inside of the uterus, (the endometrium) becomes implanted **outside** the uterus, most commonly on the fallopian tubes, ovaries, or the tissue lining the pelvis.

• common symptoms - pain and infertility

• **Female infertility**

• **Menopaus**