Female Reproductive System

A. Functions

 1.

 2. – receive sperm from male

 3.

 4. Provide sites for egg

 5. Acts as

 6.

B. Structures

 1. Internal Structures

 A) Ovaries – produce

 1) Covered by 2 cell layers

 a) Germinal epithelium –

 i)

 b) Tunica albuginea –

 i)

 2) Interior is composed of numerous sac-like structures

 a) Each contains an

 B) – conduct egg, location of fertilization

 1) – expanded opening at the proximal end (near the ovary)

 2) – finger-like extensions of the infundibulum

 a) Not directly attached to the ovary

 b) Help into the uterine tube

 3) Takes days for an egg to pass through

 C) – site of implantation & development

 1) 3 tissue layers

 a) – inner layer; simple columnar epithelium

 b) – middle layer; smooth muscle tissue

 c) – outer layer; simple squamous and areolar CT

 2) – narrow neck of the uterus that projects into the vagina

 inferiorly

 a) Contains openings to the uterus & vagina

 i) External & internal os – openings between cervix & vagina and

 the cervix & uterus respectively

 D) – receives sperm during copulation; serves as birth canal

 1) 3 tissue layers

 a) layer – inner layer; non-keratinized stratified squamous

 b) layer – middle layer; smooth muscle

 c) layer – outer layer; areolar CT

 2) – clefts created where the vagina surrounds the cervix

 3) – opening between the vaginal canal the outside the body

 a) Is usually partially covered by a thin mucus membrane known as the

 until the time of first intercourse

 2. External Structures (collectively known as the vulva)

 A)

 1) Hair-covered, longitudinal folds comprised mostly of adipose covered by skin

 2) Enclose and protect other external structures

 B)

 1) Hairless, flattened, longitudinal folds located in the cleft between the labia

 majora; composed largely of CT

 2) Close to cover and protect vaginal and external urethral openings

 3) – region between the labia minora

 a) Contains the

 b) glands – produce mucus to facilitate copulation;

 analogous to the ulbourethral glands in males

 c) glands – produce mucus to facilitate copulation;

 analogous to the prostate gland in males

 C)

 1) Located at the anterior junction of the labia minora; highly innervated by sensory

 neurons

 2) Functions in physiological, sexual arousal; analogous to the

 D)

 1)

 2) Tears or is cut (episiotomy) during natural childbirth

 E)

 1) Rounded ridge of tissue over the pubic symphysis

 2) Covers with hair at puberty

C. Oogenesis & Ovulation

 1. During development, primordial follicles begin forming (usually ~2 million)

 A) These become inactive until puberty; many die in between (~400,000 remain)

 B) Contain 2 types of cells

 1) A single (diploid)

 a) Will become the

 2) Several cells

 a) Make up the wall of the

 2. At puberty, initiate the maturation of primordial follicles (1 each month)

 into

 3. Primary follicle continues to grow resulting in a

 A) Follicular cells are now called granulosa cells and are several layers thick

 B) Has a distinct fluid-filled portion =

 4. Secondary follicle continues to enlarge resulting in a

 A) The 1o oocyte is now isolated within its own cell layer =

 1) – thick transparent membrane surrounding the oocyte

 just beneath the corna radiata

 5. LH & FSH cause the 1o oocyte (in the Graafian follicle) to undergo meiosis I

 resulting in 2 daughters

 A)

 1) Obtains most of the cytoplasm and is the larger of the 2

 2)

 B)

 1) Much smaller than secondary oocyte

 2) Contains 1 set of chromosomes and left-over cytoplasm

 3)

 6. The follicle then fuses with the membrane of the ovary and continues to fill with fluid

 resulting is a blister-like structure

 7. causes the walls of the follicle to weaken and the follicle bursts releasing the

 secondary oocyte into the uterine tube =

 A) The walls of the ruptured follicle stay in the ovary becoming the

 8. If fertilization occurs, the 2o oocyte undergoes meiosis II resulting in 2

 daughters

 A) One fertilized ovum (egg) or

 1) Will develop into an

 B)

 1) Similar to first polar body in structure

 2)

 9. If no fertilization, meiosis II won’t occur, the 2o oocyte moves to the uterus and is

 discharged during menses

D. Ovarian cycle (usually 28 days)

 1. – FSH begins development of the follicle; days

 2. – LH causes release of the egg into the uterine tube; day

 3. – corpus luteum forms from remains of Graafian follicle; days

 A) Produces estrogen and progesterone in preparation for implantation & inhibin to

 inhibit further follicle maturation

 1) If no implantation occurs, corpus luteum degenerates, hormone production

 ceases, and menses & follicular maturation begin

 a) The resulting structure is referred to as the , which

 will eventually degenerate

 2) If implantation occurs, (hCG) is

 produced by the developing embryo to maintain the corpus luteum until the

 placenta develops

E. Uterine cycle (usually 28 days)

 1. – sloughing off of the uterine lining; days

 2. – prior to ovulation; endometrium thickens and develops

 more blood vessels in preparation for implantation; days

 3. – after ovulation; uterine lining produces estrogen and

 progesterone in preparation for implantation; days

 A) If no implantation occurs, the cycle starts over and menses begins again

 B) If implantation occurs, the cycle will stop until the end of the pregnancy

F. Menopause –

 1. Occurs years of age

 2. Ovaries

 3. Number of remaining follicles

 4. Estrogen levels

 5. Hot flashes and mood swings common due to hormonal imbalances

G. Hormones (review LH & FSH from endocrine chapter)

 1. Ovaries

 A)

 1) Actually a group of hormones

 2) is the most common

 3) Have a number of functions

 a) Enlargement of

 b) Responsible for secondary sex characteristics

 i) Development of the

 ii) Increased deposits of adipose, mostly in

 iii)

 B) Progesterone

 1) Promotes changes in the

 2) Involved with

 3) Regulates hormones of the

 2. Adrenal Gland

 A)

 1) Secreted by the

 2) Physical changes depends on its concentration

 a) Low concentrations

 i) Results in

 b) High concentrations

 i) Cause increased

 3) Also responsible for

H. Mammary Glands

 1. Modified sweat glands present in both sexes

 2. Functional only in females in response to

 3. Purpose is

 4. secrete the milk and are clustered in lobules

 5. Each lobule drains into lactiferous duct which dilates to form a

 just beneath the areola

 A) Site of

 6.

 A) The pigmented portion of the breast with a protruding nipple

 7.

 A) Contains openings of

I. Birth Control

 1. Condoms (97-99%)/diaphragms (82-98%) – prevent

 2. Intrauterine devices (IUDs) (97-99%) – damage sperm passing through the cervix

 3. Pills (98-99.5%) – prevent

 4. Injections (99-99.7%) – prevent

 5. Sterilization (98-99.4%)

 A) – the vas deferens are severed and sealed to prevent sperm

 from being released during ejaculation

 B) – the uterine tubes are severed and sealed to prevent sperm

 from reaching the egg

 6. method (75-99%) – female breaks down her monthly cycle into “safe”

 and “unsafe” days; she refrains from sexual activity or uses other birth control on

 “unsafe” days

 7. method (81-96%) – male withdraws before climax to prevent the

 release of sperm into the female

J. Disorders

 1. Pelvic inflammatory disease (PID) – results from a bacterial infection of the uterus,

 uterine tubes, or other reproductive structures causing inflammation of the infected

 structures

 2. Cervical cancer – most common among women ages 30-50

 A) Seen with higher frequency when there is a history of sexually transmitted diseases

 (especially HPV) or multiple pregnancies

 3. Amenorrhea – abnormal cessation of menses

 4. Dysmenorrhea – painful menstruation

 5. Endometriosis – over production of endometrium

 6. Breast cancer – cancer of the glandular breast tissue

 A) #1 cancer among women in the U.S.

 B) #1 cancer killer in women worldwide

 7. Ectopic pregnancy – when the fertilized ovum implants in tissue other than the uterus

 A) Commonly in the uterine tubes but can also occur in cervix, ovaries, and abdomen