

1st week	
primordial germ cells	Inductive Influence on the differentiation of the gonad into ovary or testis
Estrogen(placenta & fetal ovaries)	Feminization of the external genitalia.
Non-ciliated cells of Fallopian tubes	Their apices contain nutritive material to nourish gametes
Endometrium coiled arteries	Cyclic changes
Vaginal glycogen	Feed the bacteria there (normal flora) & prevent any infection
P: Both FSH and LH	Increase: 1. Rates of secretion, 2. Growth & proliferation of the cells. lead to the beginning of monthly reproductive cycles.
Theca	Interna: secrete sex hormones (estrogen & progesterone)
	Externa: highly vascular connective tissue capsule of the developing follicle
During childhood, the granulosa cells	•nourishment for the ovum • Secrete oocyte maturation inhibiting factor which keeps the ovum in its primordial state.
LH	Convert granulosa & theca cells into progesterone-secreting cells
FSH	Convert primordial follicle to primary follicle at puberty (Sertoli cells) causes these cells to grow & secrete spermatogenic substances (such as ABP)
Corpus Luteum	•Granulosa cells secreting estrogen & progesterone •Theca interna secreting mainly androgens that are converted to estrogen in granulosa cells. In pregnancy: continue releasing estrogen and progesterone that will continue in inhibiting AP releasing of FSH and LH →no ovulation
Progesterone	•Causes marked swelling & secretory development of the endometrium. • promotes the secretory changes in the uterine endometrium. • promotes increased secretion by the mucosal lining of the fallopian tubes. • promotes development of the lobules and alveoli of the breasts, causing the alveolar cells to proliferate, enlarge, and become secretory. • decreases the frequency and intensity of uterine contractions.
Estrogen	• increase the size of ovaries, fallopian tubes, uterus, and external genitalia.

	<ul style="list-style-type: none"> • cause marked proliferation of the endometrial stroma and greatly increased development of the endometrial glands. • cause: <ol style="list-style-type: none"> (1) development of the stromal tissues of the breasts (2) growth of an extensive ductile system (3) deposition of fat in the breasts. • stimulate bone growth and slightly increase protein deposition. • increase body metabolism and fat deposition. • cause sodium and water retention by the kidney tubules
endometrial glands in cervical region	Secrete a thin, stringy mucus which help to guide sperm in the proper direction from the vagina into the uterus.
Stroma	Contain tubulo alveolar glands that secretes the Cervical mucus.
Ovaries	<ul style="list-style-type: none"> •Production of female germ cells •Secretion of female sex hormones
UTERINE TUBES	<ul style="list-style-type: none"> •Site of fertilization •Transport of fertilized ovum into the uterus
Uterus	Pregnancy Support: <ul style="list-style-type: none"> •Round ligament of uterus (maintains anteverted anteflexed position) •Ligaments of cervix (especially transverse cervical [cardinal]) •Levator ani muscles
Vagina	<ul style="list-style-type: none"> •Copulatory organ. •Birth canal.
pelvis	Protects the lower parts of the alimentary & urinary tracts & internal organs of reproduction. Bony pelvis: bony canal through which the child passes during birth.
Pubococcygeus	<ul style="list-style-type: none"> •supports the prostate (or constricts the vagina) • stabilizes the perineal body
puborectalis	Maintaining fecal continence.
levator ani muscles	<ul style="list-style-type: none"> •Form the pelvic floor form pelvic diaphragm support pelvic organs •resist the rise in intra pelvic pressure during the straining and expulsive efforts of the abdominal muscles (as in coughing). •maintaining fecal continence. •serve as a vaginal sphincter in the female.
Perineal Body	<ul style="list-style-type: none"> •Gives attachment to perineal muscles • Plays an important role in visceral support especially in female

Anococcygeal Body	Receives insertion of fibers of levator ani muscle
Pudendal nerve block	Providing analgesia for the second stage of labour and to provide anesthesia of the perineum in order to create or repair an episiotomy.
episiotomy	Incision on the perineum and the posterior vaginal wall during second stage of labor to prevent perineal tear.
secretory changes	prepare the endometrium (stored nutrients) for implantation of the fertilized ovum .
Uterine secretions called “uterine milk”	provide nutrition for the diving ovum.

2nd week	
testis determining factor	<ul style="list-style-type: none"> •determine the type of gonad differentiated from the indifferent gonad •Regression of cortex & differentiation of medulla into testis. •Gonadal cords condense & extend into medulla to form seminiferous cords.
thick fibrous capsule	Separates the enlarging testis from mesonephros.
External descent of testis	1. Controlled by androgens. 2. Guided by gubernaculum. 3. Facilitated by processus vaginalis. 4. Helped by increased intra- abdominal pressure resulting from growth of abdominal viscera.
Scrotum	<ul style="list-style-type: none"> •Houses & Protects the testis •It has thin skin with sparse hairs and sweat glands. •It Regulates testicular temperature (no superficial fat) • The Dartos muscle lies within the superficial fascia, & replaces Scarpa’s fascia
Testis	•Spermatogenesis. •Hormone production (Androgens-testosterone).
	Tunica Vaginalis: allows free movement of testis inside scrotum.
	Seminiferous Tubules: •site of the spermatogenesis. •They form the bulk of testicular tissue.
Cremasteric reflex	Evaluation of testicular pain. (Testicular Torsion) [over 30 month]
Epididymis	<ol style="list-style-type: none"> 1. Secretes/absorbs the nourishing fluid. 2. Recycles damaged spermatozoa. 3. Stores spermatozoa Up to 2 weeks to allow for maturation.

	<ul style="list-style-type: none"> •Storage & Maturation of Spermatozoa •Propelling Spermatozoa to Vas Deferens •Maturation of sperm •inhibitory proteins in the epididymis fluid prevent final motility until ejaculation. •secrete nutrient fluid which contains (testosterone & estrogen).+ enzymes
Vas Deferens	<p>Carries sperms from the Epididymis to pelvic cavity. (secrete 10% of semen)</p> <p>Propelling of spermatozoa by strong peristalsis</p>
Accessory Glands	<p>1. Secretion of seminal fluid 2. Nourishing, Activation & Protection of sperms</p> <p>Seminal Vesicles: Secrete (60% of Semen)</p> <ul style="list-style-type: none"> •Secretion of most Seminal Fluid •rich in Fructose & Vit-C which are main nutrients for Spermatozoa <p>Secrete mucoid material containing fructose, citric acid & nutrient substance & large quantities of prostaglandins & fibrinogen</p> <ul style="list-style-type: none"> ○ (Prostaglandins): important help in fertilization: •By reacting with the female cervical mucus making it more receptive to sperm movement •By causing backward reverse peristaltic contraction of the uterus & fallopian tubes to move the ejaculated sperm toward the ovaries <p>Prostate Gland: Secretes (20-30% of semen), Houses prostatic urethra</p> <p>Secretes enzymes which has the following functions:</p> <ul style="list-style-type: none"> •Aids in activating sperm motility •Mucus degradation •Antibiotic •Neutralizes Alkaline fluid of female reproductive tract <p>secretion is rich in Acid Phosphate & Proteolytic Enzymes</p> <ul style="list-style-type: none"> •Secrete thin milky fluid contain Ca⁺⁺ ion, citrate ion, phosphate ion, clotting enzyme & profibrinolysin. ○ Alkaline Prostatic Fluid: •Successful fertilization of the ovum •Help to neutralize the slightly acidic fluid of the vas deference (due to the presence citric acid and metabolic product of the sperm that inhibit sperm fertility) •Help to neutralize the acidity of the other seminal fluids during ejaculation & enhances motility & fertility of sperm <p>Bulbourethral Glands: (secrete small amount of semen)</p> <p>Secrete alkaline mucus for: Neutralization of urinary acids & Lubrication</p>
ejaculatory ducts	Drain the seminal fluid into the prostatic urethra.
Lobes	Median & Lateral lobes are rich in glandular tissue.

Penis	<p>(Copulatory) Corpora Cavernosa: Provide the majority of rigidity & length of penis</p> <p>Excretory organ: Penile urethra transmits urine & sperm.</p>
LH ->Leydig's cells (interstitial cells) by testosterone	<ul style="list-style-type: none"> • Stimulate mesonephric duct to form the ductal system that composed of : 1) Epididymis 2) Vas deferens 3) Seminal glands, 4) Ejaculatory duct. • Masculine differentiation of external genitalia. <p>testosterone :</p> <ul style="list-style-type: none"> • essential for the division & growth of the testicular germinal cells • responsible for the characteristic masculine body. • increases bone matrix and causes Ca²⁺ retention • increases basal metabolism • increases red blood cells • increase the reabsorption of Na⁺ in the distal tubules of the kidneys. • increases the rate of protein synthesis in target cells.
FSH->Sertoli cells	<p>secrete (Anti-Müllerian hormone) which suppress the development of paramesonephric (Müllerian) duct</p> <ul style="list-style-type: none"> • Support & Nutrition of spermatogenic cells. • Phagocytosis of cytoplasmic remnants of spermatogenesis. • Secretion: Testicular fluid, androgen Binding Protein (ABP), Inhibin hormone which inhibit FSH • Formation of blood-testis barrier • conversion of spermatids to sperm (spermatogenesis) • Synthesis of aromatase enzyme that convert androgens to estrogen
Blood-Testis Barrier	<p>It protects the developing spermatogenic cells from drugs and toxic materials. • It prevents autoimmune infertility.</p>
mature sperm	<ul style="list-style-type: none"> • motile & capable of fertilizing the ovum. • activity is enhanced in a neutral & slightly alkaline medium & depressed in mildly acidic medium.
Estrogen	<p>Formed from testosterone by sertoli cells under FSH control</p> <p>In (Female) induces secondary sex characteristics:</p> <ul style="list-style-type: none"> • Growth of pelvis • Deposit of subcutaneous fat • Growth of internal reproductive organs and external genitalia
Growth hormone	<p>Controlling metabolic function of the testis , also promotes early division of spermatogenesis so if there defect in GH it will cause infertility</p>
semen mucoid consistency	<p>from the seminal vesicles & mucous glands fluid</p>
acrosome	<p>Covered by cholesterol which prevent the release of its enzyme.</p> <p>after ejaculation: sperm membrane becomes more permeable to Ca⁺⁺ ion which increase their movement & help to release the proteolytic enzyme from acrosome which aid in penetration the ovum.</p>

	Store: large quantity of hyaluronidase: depolarizes hyaluronic acid polymers In the intracellular cement that hold the ovarian granulosa cells together & proteolytic enzyme: digest the proteins.
Penile erection+ Lubrication	parasympathetic impulses
Emission and ejaculation	Function of the sympathetic nerves.
Dihydrotestosterone	induces protein formation. increases the proliferation of stromal cells & inhibits epithelial cell death.
androgens	<ul style="list-style-type: none"> •Responsible for development of pubic and axillary hair •body odour •acne. (Female) •Growth of pubic hair • Lowering of voice • Growth of bone • Increased secretion from sebaceous glands. (Male) Spermatogenesis growth of: male secondary sex characteristics: •facial hair •growth of larynx Sex accessory structures: • Prostate: causes retention of minerals in body to support bone and muscle growth.
Gonadotropins	stimulate secretion (estrogenes and androgenes) of sexual steroids
TSH	•Increases metabolic rate • Promotes tissue growth
Leptin	•regulates appetite and metabolism through hypothalamus. •Permissive role in regulating the timing of puberty •accelerates the HPG axis (GnRH)

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