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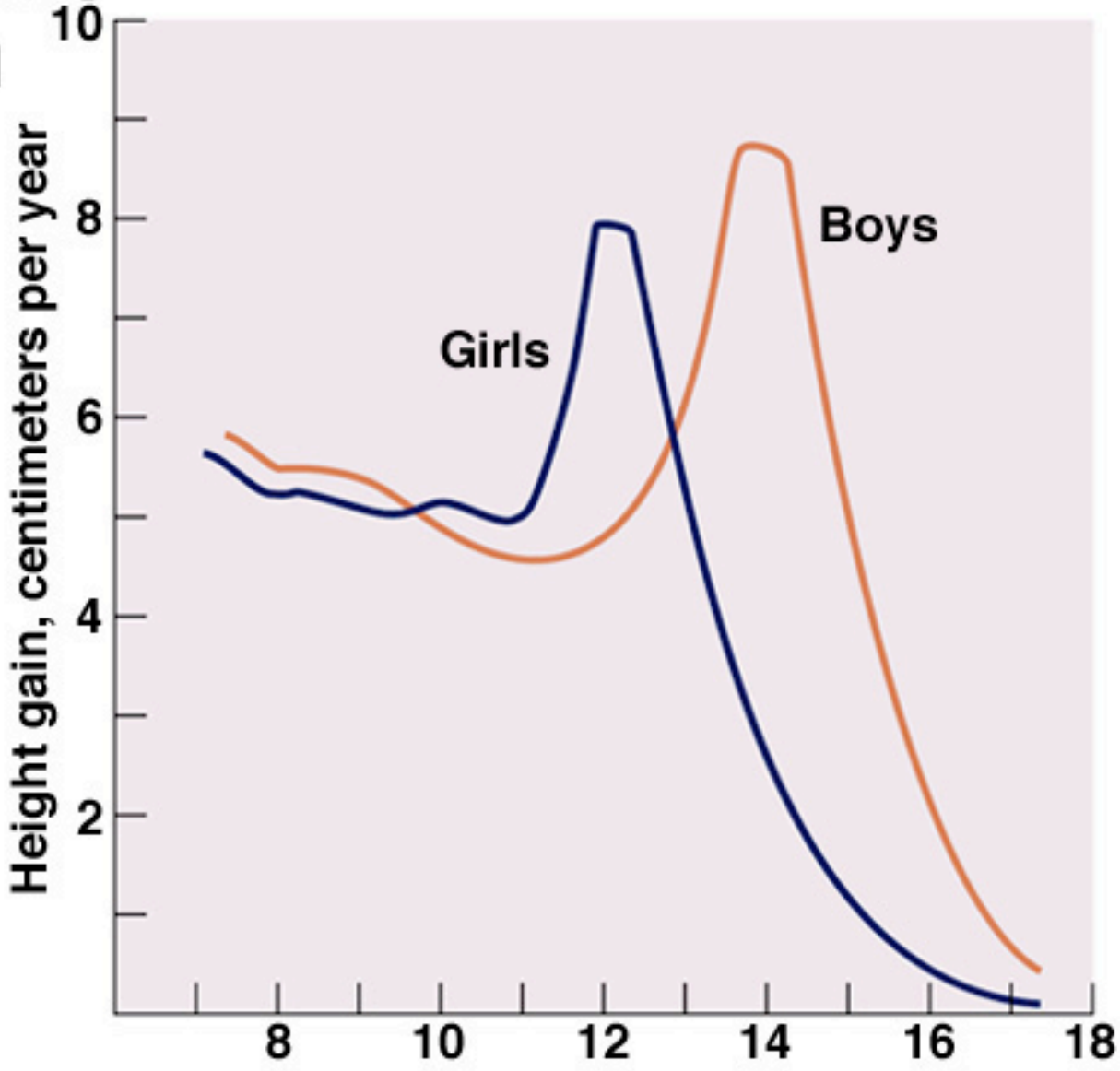
Adolescent Growth Spurt



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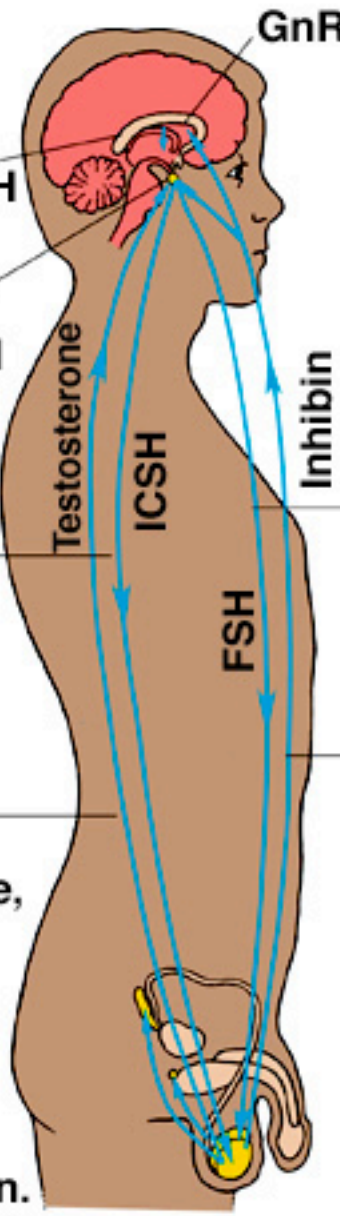
Hypothalamus-Pituitary-Testes Connection



Hypothalamus releases GnRH

Pituitary gland releases the gonadotropins FSH and ICSH

ICSH stimulates interstitial cells in the testes to produce testosterone

Testosterone stimulates the development and maintenance of male secondary characteristics, influences male sexual desire, and, with FSH, stimulates the seminiferous tubules in the testes to produce sperm. Testosterone feeds back to the hypothalamus and pituitary to inhibit GnRH production and LH production.

FSH, with testosterone, stimulates the seminiferous tubules in the testes to produce sperm

Inhibin released by Sertoli cells; feeds back and inhibits anterior pituitary production of FSH

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Hormones that Affect Male Reproductive Processes

HORMONES THAT AFFECT THE MALE REPRODUCTIVE PROCESSES

HORMONE	SOURCE	ACTION
GnRH	Hypothalamus	Stimulates pituitary gland to secrete the gonadotropins FSH and ICSH
ICSH (LH)	Pituitary	Stimulates interstitial cells (cells of Leydig) in the testes to produce androgens, especially testosterone
FSH	Pituitary	Along with testosterone, stimulates spermatogenic cells in seminiferous tubules to produce sperm
Testosterone	Testes (interstitial cells)	Stimulates developement of a man's primary and secondary sex characteristics and affects his sexual behavior; along with FSH, stimulates spermatogenic cells to undergo spermatogenesis; feeds back to hypothalamus and pituitary, where it inhibits GnRH secretion to pituitary and LH production by the pituitary gland
Inhbin	Testes (Sertoli cells)	Maturing sperm causes Sertoli cells in seminiferous tubules to secrete inhibin, which feeds back to the pituitary, inhibiting its production of FSH

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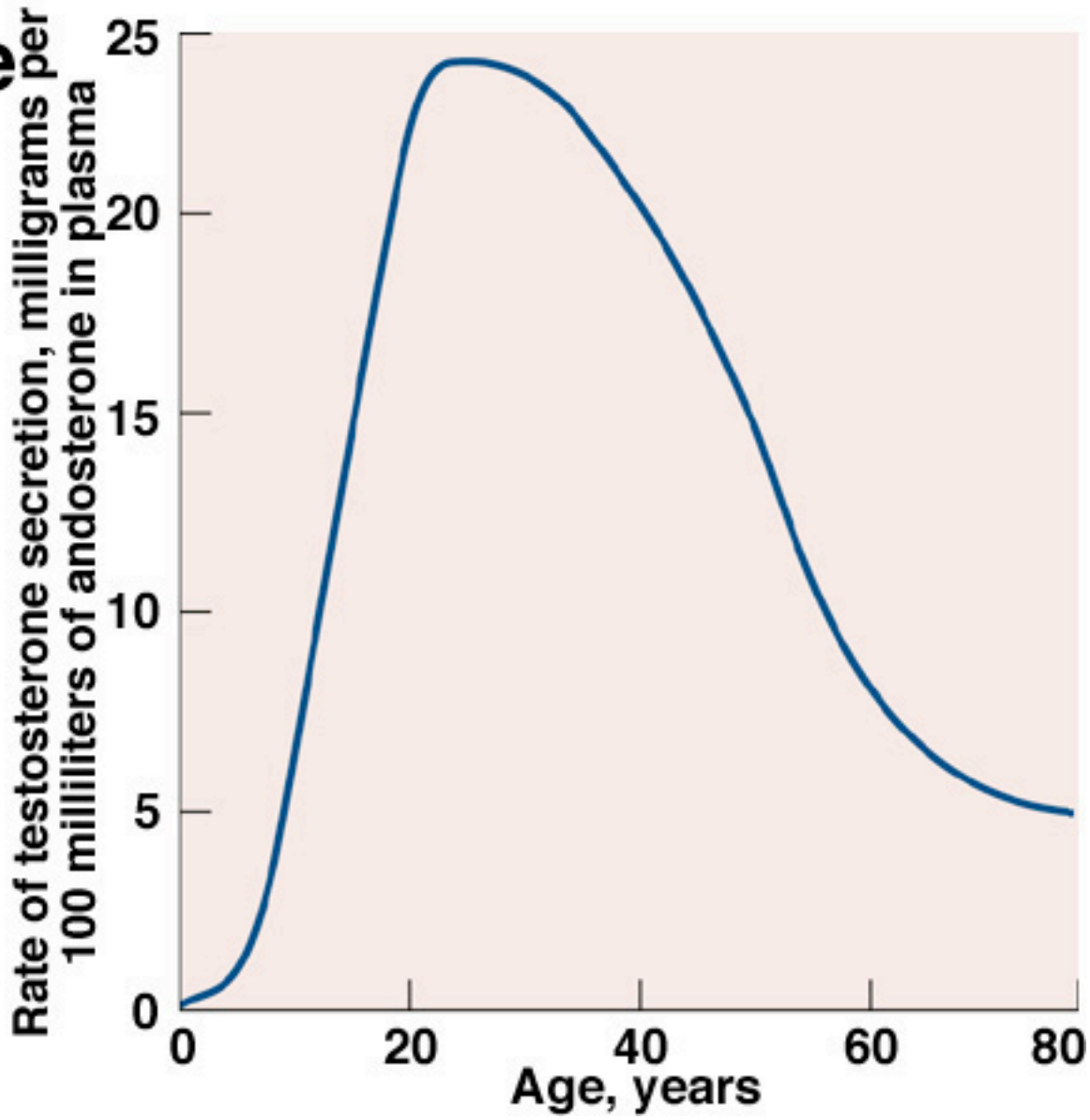
Testosterone Production in Men



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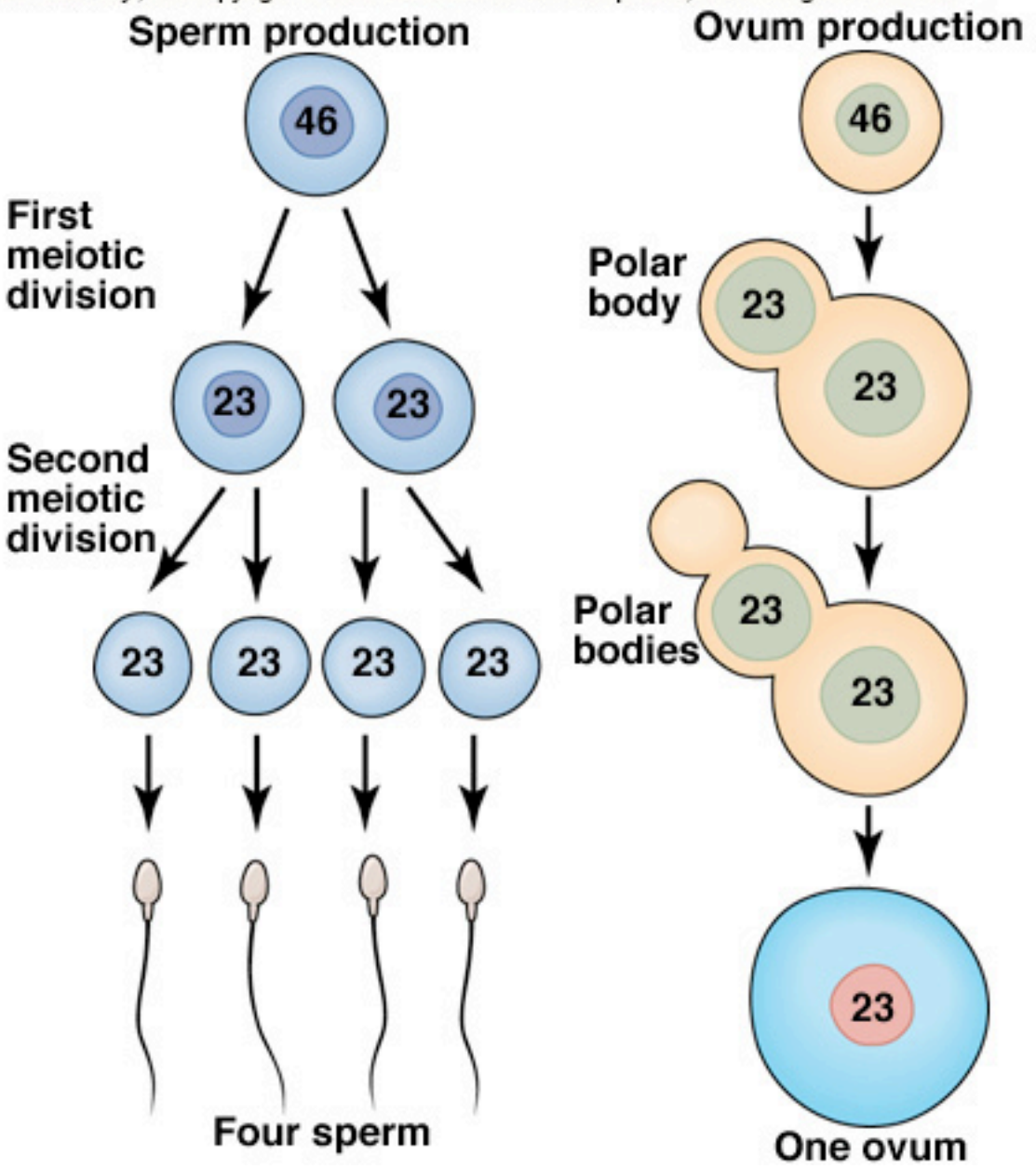
Ovum and Sperm Production



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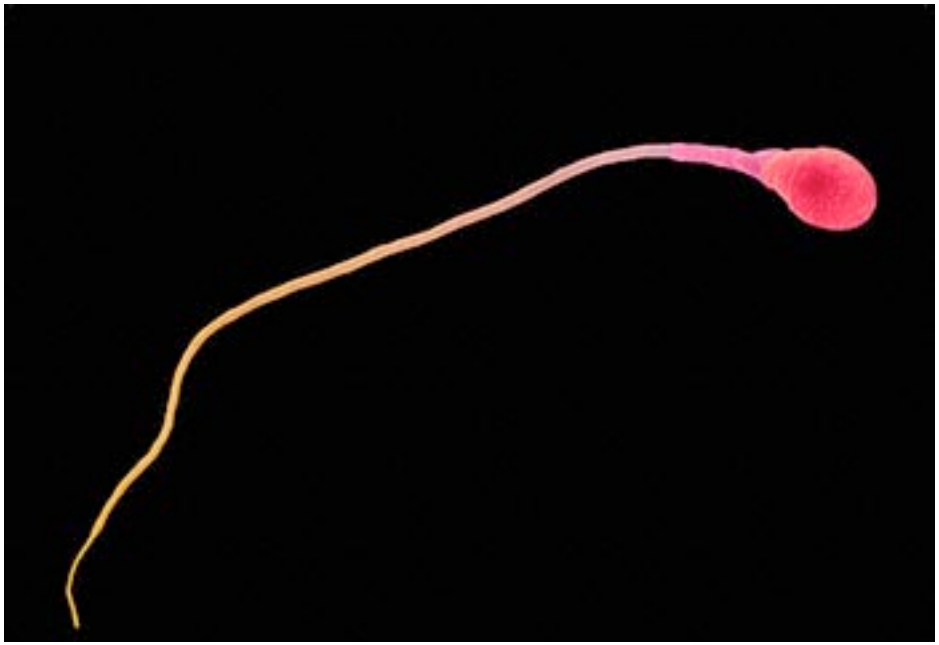
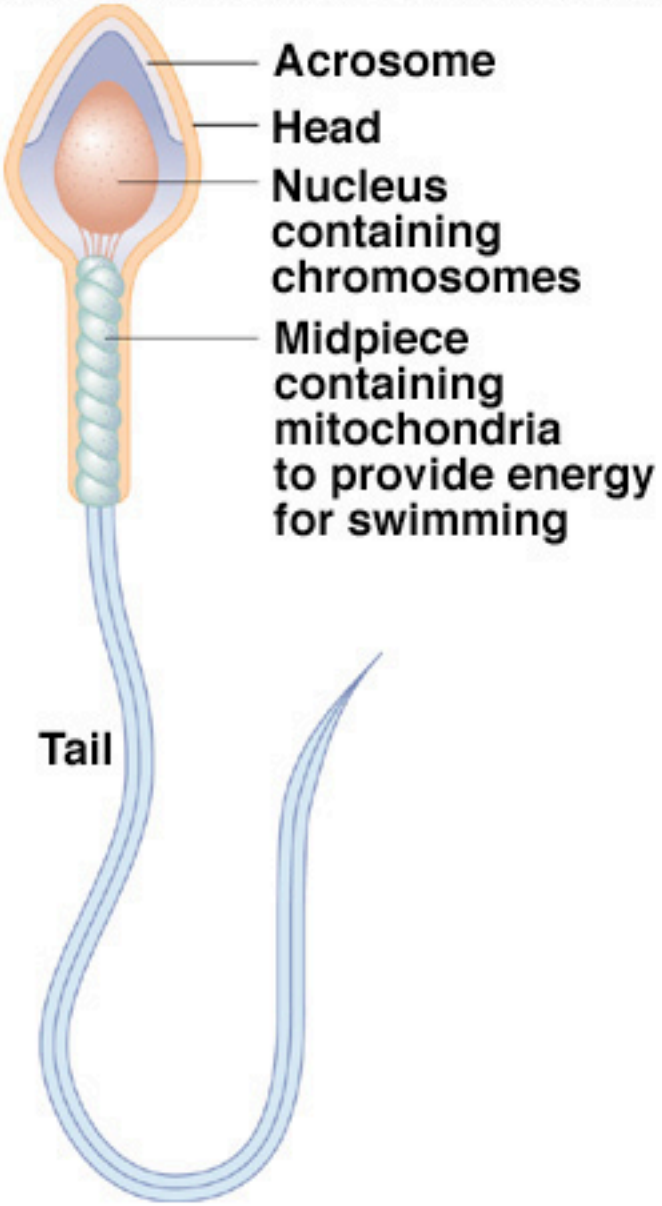
Mature Human Sperm





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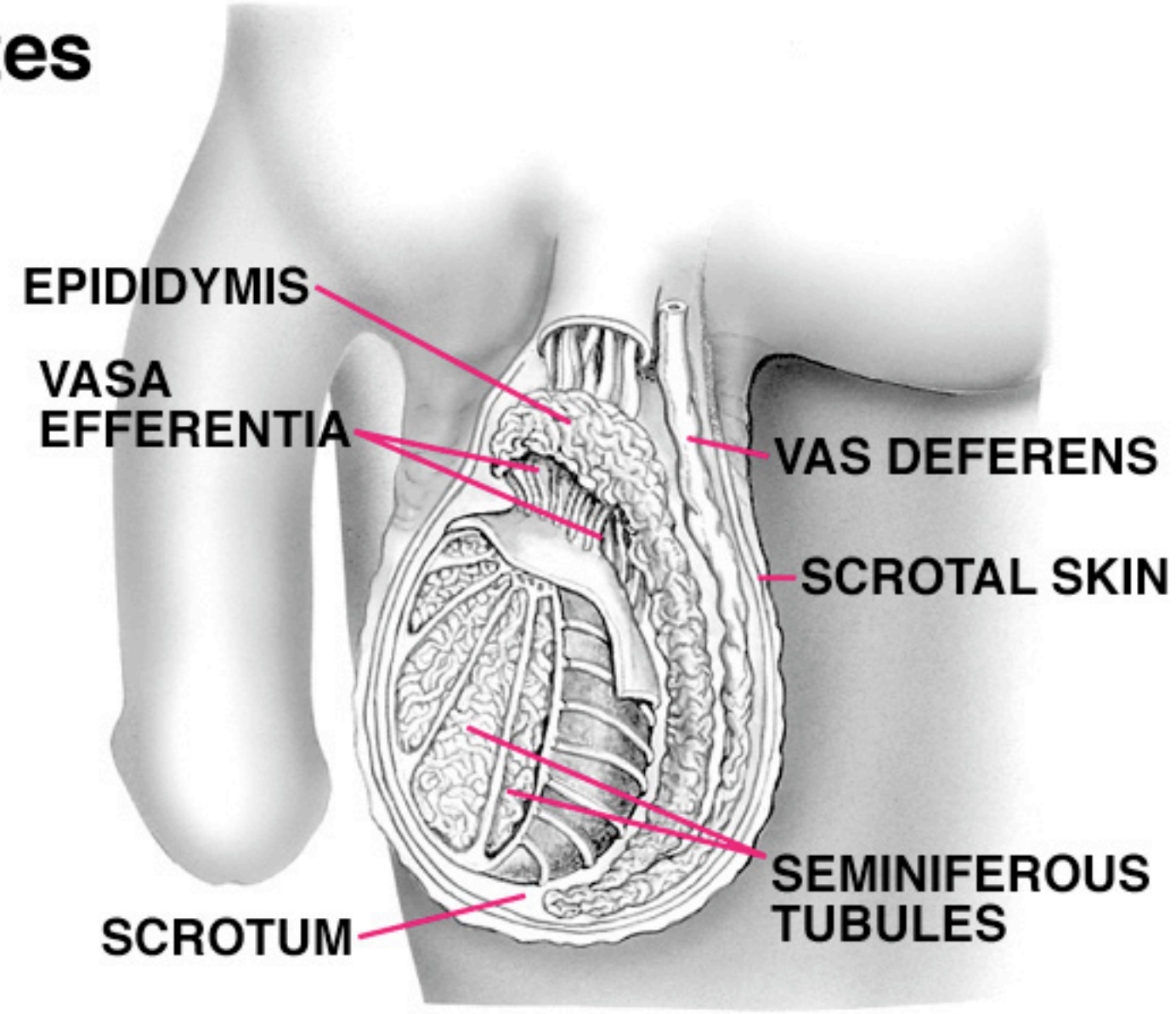
Testes



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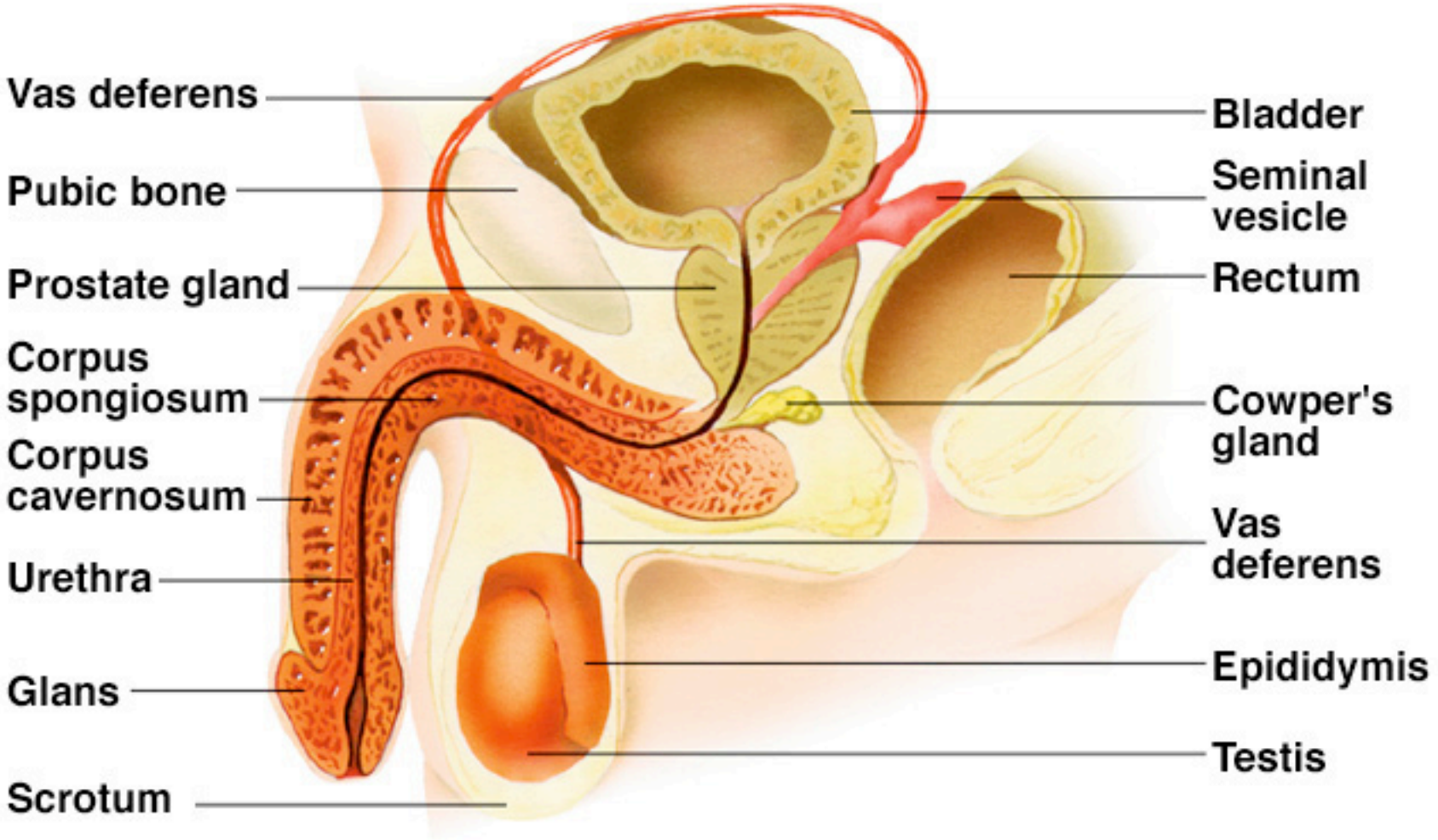
Male Sexual & Reproductive Organs



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Functions of Male Reproductive System

STRUCTURES AND FUNCTIONS OF THE MALE REPRODUCTIVE SYSTEM

ORGAN	FUNCTION
External	
Penis	Male organ for urination and the release of semen; richly supplied with nerve endings; associated with feelings of pleasure during sexual stimulation
Scrotum	Encloses the two testes; maintains the testes at a temperature suitable for sperm production
Internal	
Testes	
Seminiferous tubules	Produce sperm
Intestitial cells (cells of Leydig)	Produce and secrete the male hormone testosterone
Epididymis	Stores slowly maturing sperm until sperm are released into the vas deferens for ejaculation or until they disintegrate or are reabsorbed
Vas defrens	Carries sperm upward from epididymis to the ejaculatory duct
Fluid-producing glands	
Seminal vesicles	Secrete fluid with a high fructose content to nourish sperm; fluid also contains a prostglandin to stimulate muscular contractions in the female that assist in sperm movement
Prostate gland	Secretes fluid that initiates the movement of sperm and nutritionally sustains sperm
Cowper's (bulbourethral) glands	Secrete fluid that neutralizes the acidity of any urine in the urethra prior to the passage of semen

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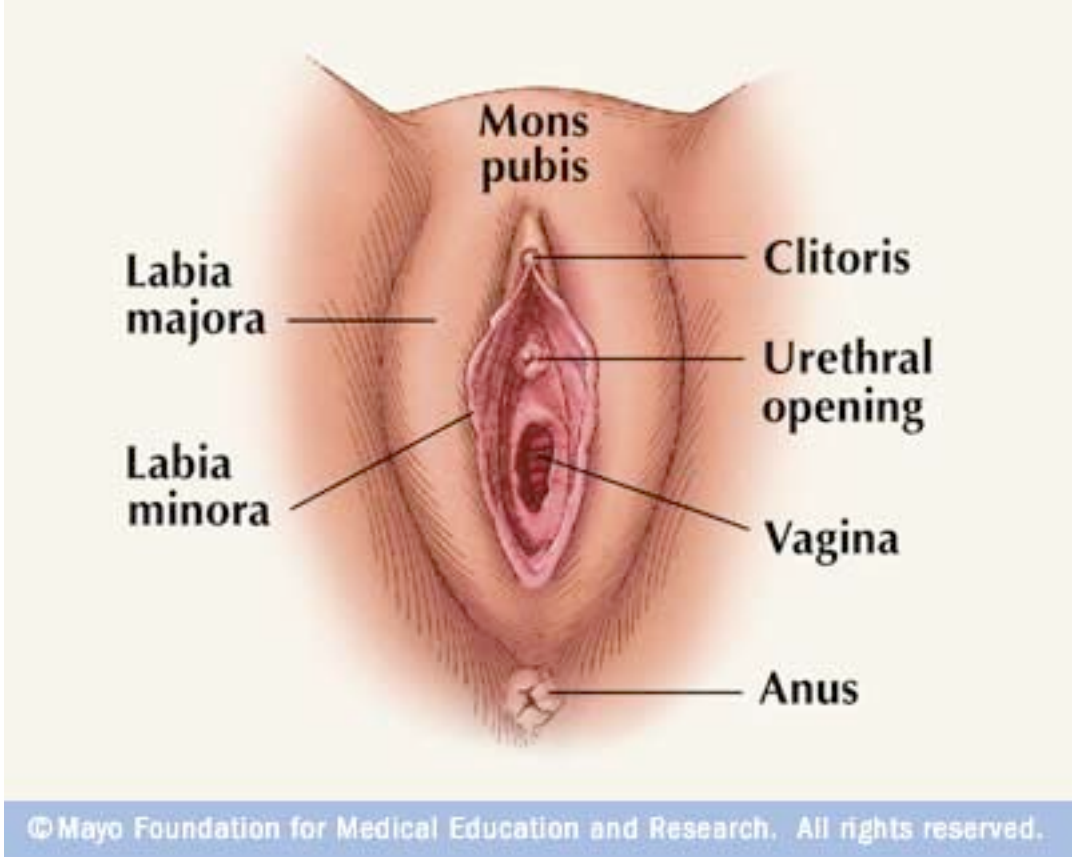
Semen Analysis

An evolution of a man's fertility often requires a semen analysis. This can indicate whether infertility is due to problems in the sperm production. It can also be used to confirm the success of a vasectomy and to detect sperm in the body or on the clothing of a rape victim.

NORMAL RANGE (ANALYSIS)	FUNCTION
Volume--2.0 ml (cc) or more	Over 95% of semen is accessory gland fluid supplying energy, enzymes, proper pH, and viscosity (stickiness)
Motility--50% or more sperm show good forward movement within the first three hours after ejaculation	Sperm must travel a great distance to the ovum
Count--20 million or more sperm per ml; 20-40 million is borderline; below 20 million may mean infertility	Combined action of great number of sperm required to digest covering around ovum
Liquefaction--ejaculate coagulates, becomes liquid-like within one hour	Prompt liquefaction allows sperm to travel
Morphology--14% or more of sperm have normally shaped heads and tails	Normally formed sperm are able to travel and unite with ovum
pH--slightly alkaline (pH 7.2 to 7.8)	To neutralize the acidity of the vagina, which will kill sperm
Fructose--sugar present	Major energy source; sperm cell contains little stored food



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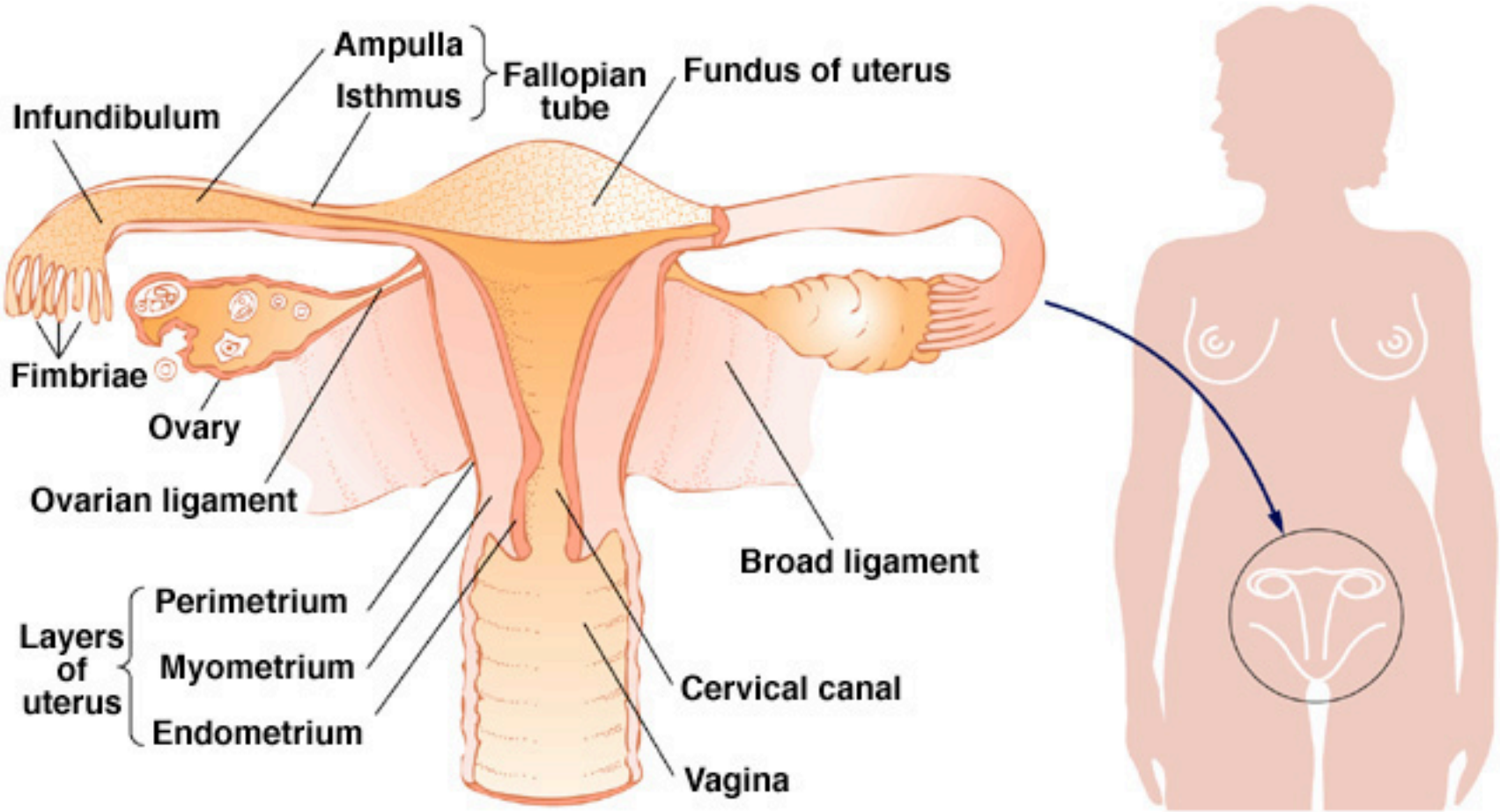
Internal Sexual & Reproductive Organs(F)



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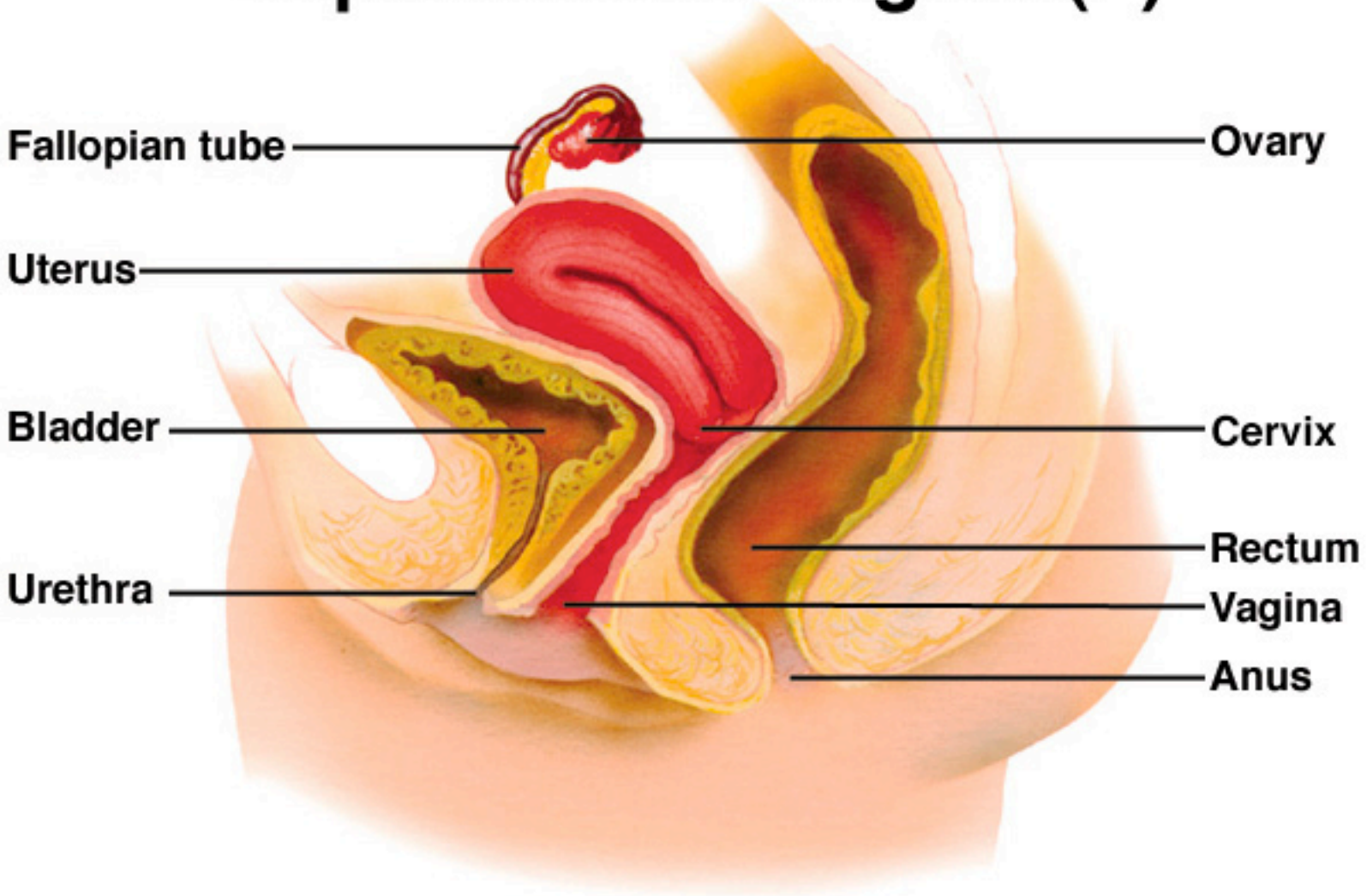
Internal Sexual & Reproductive Organs(F)



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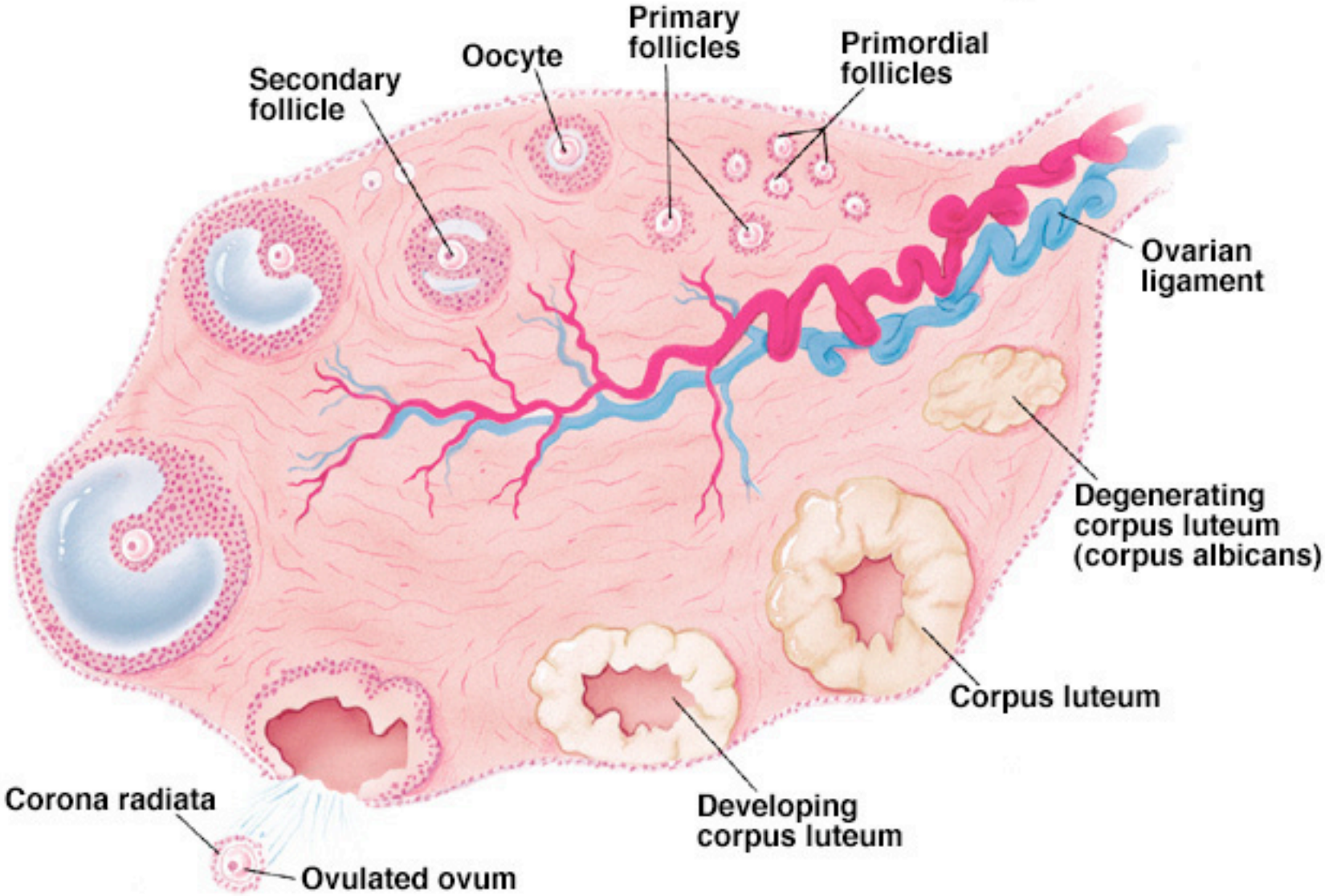
Structure of an Ovary



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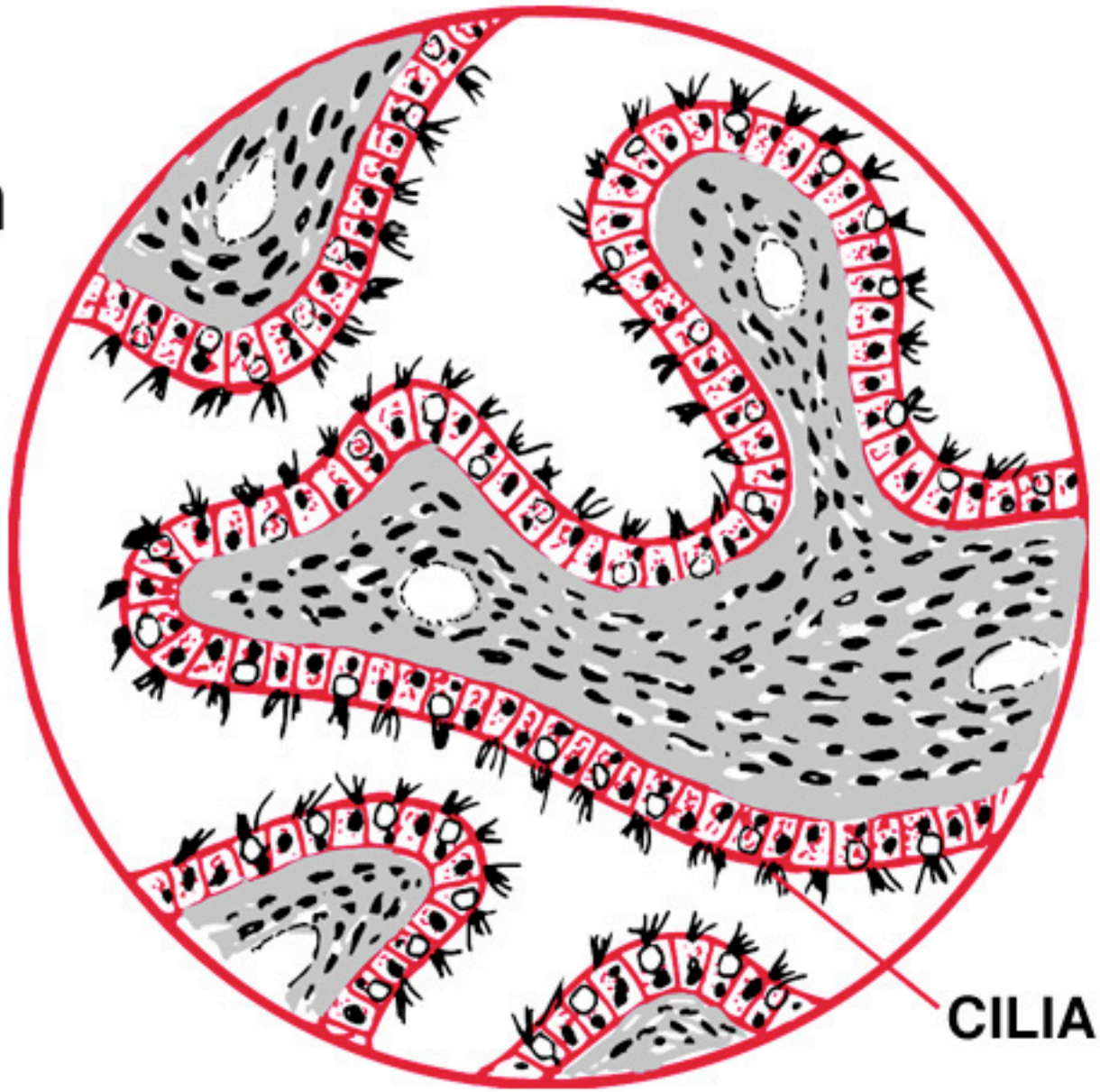
Cilia of Fallopian Tubes



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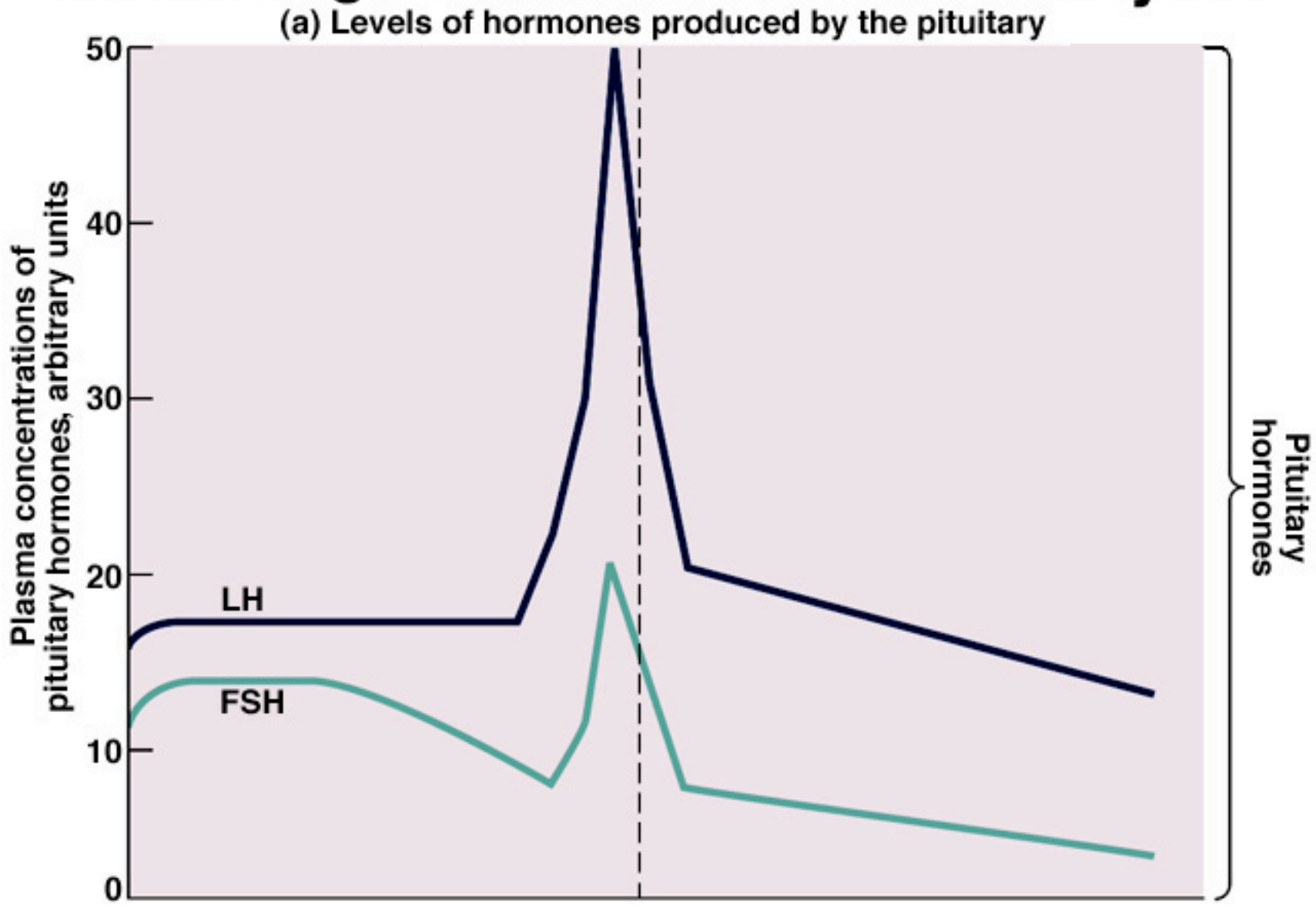
The Biological Events of Menstrual Cycle



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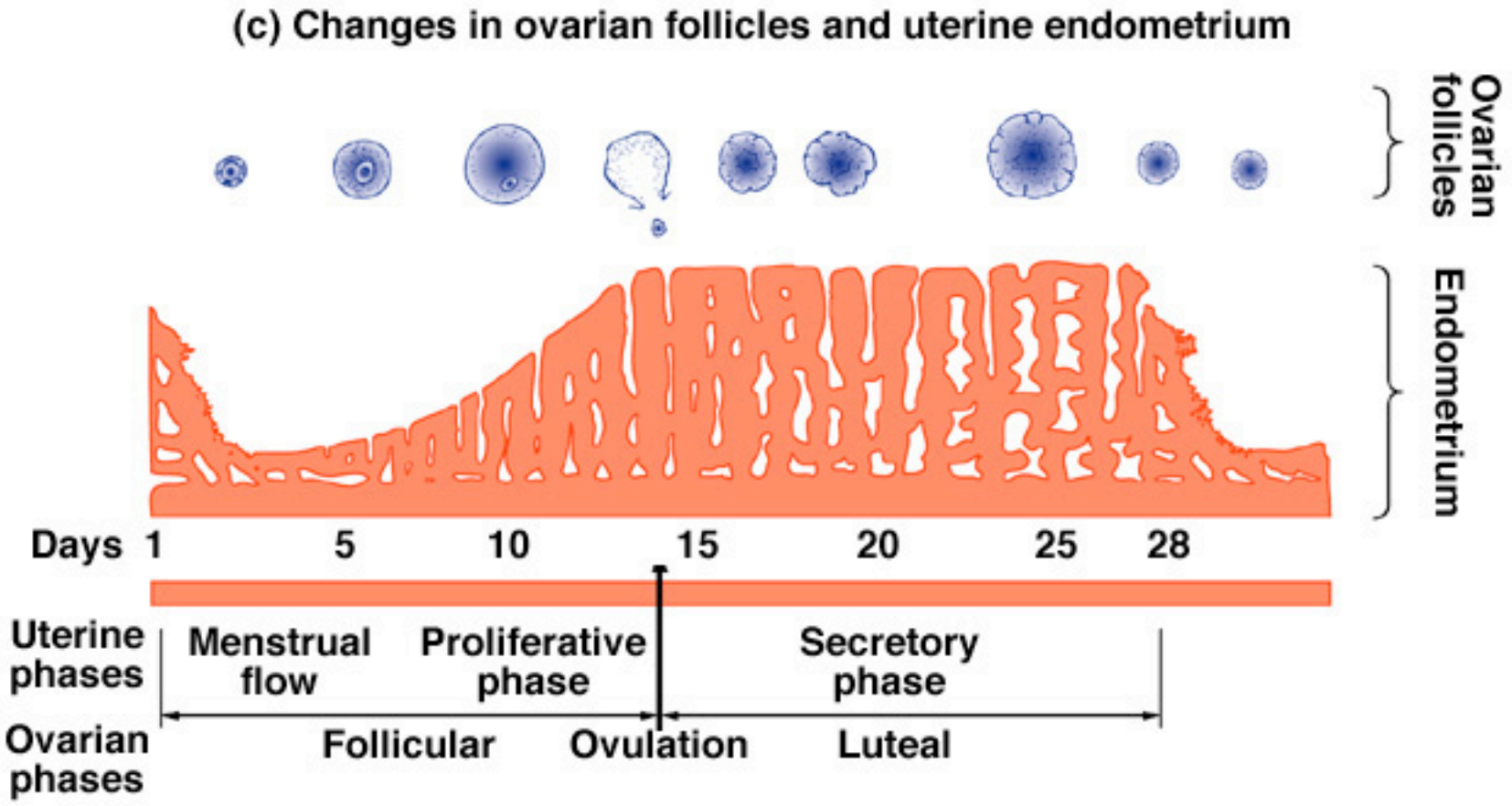

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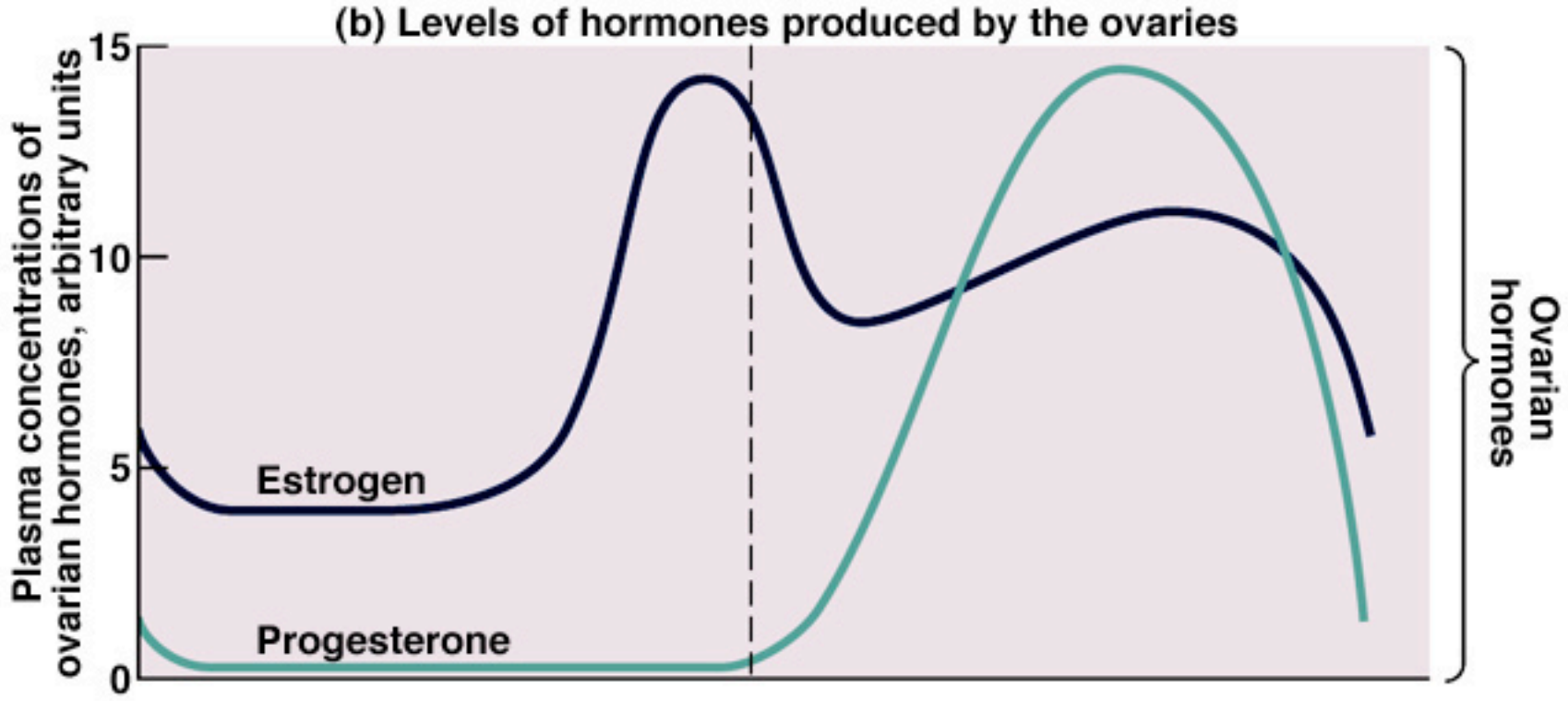

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Hormonal Action & the Menstrual Cycle

HORMONAL ACTIONS DURING THE MENSTRUAL CYCLE

HORMONE	SOURCE	ACTIONS OF HORMONE
GnRH	Hypothalamus	Stimulates pituitary to secrete FSH and LH above a basal level
FSH	Pituitary	Stimulates ovaries to develop mature follicles (with ova); follicles produce increasingly high levels of estrogens
LH	Pituitary	Surge of LH stimulates follicle to break open and discharge ovum and follicular fluid(containing estrogens); follicle converted into corpus luteum, which secretes estrogens and gradually increasing amounts of progesterone
Estrogens	Ovary (follicle)	Causes rapid growth of endometrium of uterus; causes the breast sensitivity that often accompanies menstural flow to disappear; rising level of estrogens have negative feedback effect on hypothalamus and GnRH; GnRH output reduced, and secretion of FSh and LH inhibited; very high level of estrogens reverses effect on hypothalamus, stimulating it to suddenly release large dose of GnRH; GnRH causes pituitary to release sudden surge of FSH and LH
Progesterone	Ovary (corpus luteum)	Causes endometrium to become thick, spongy, glandular, and receptive to a fertilized ovum (zygote); causes breast engorgement (may be sensitive or painful); has a negative feedback on pituitary; causing a drop in LH production, which results in the degeneration of the corpus luteum and a drop in progesterone and estrogen production; lack of progesterone initiates menstrual flow

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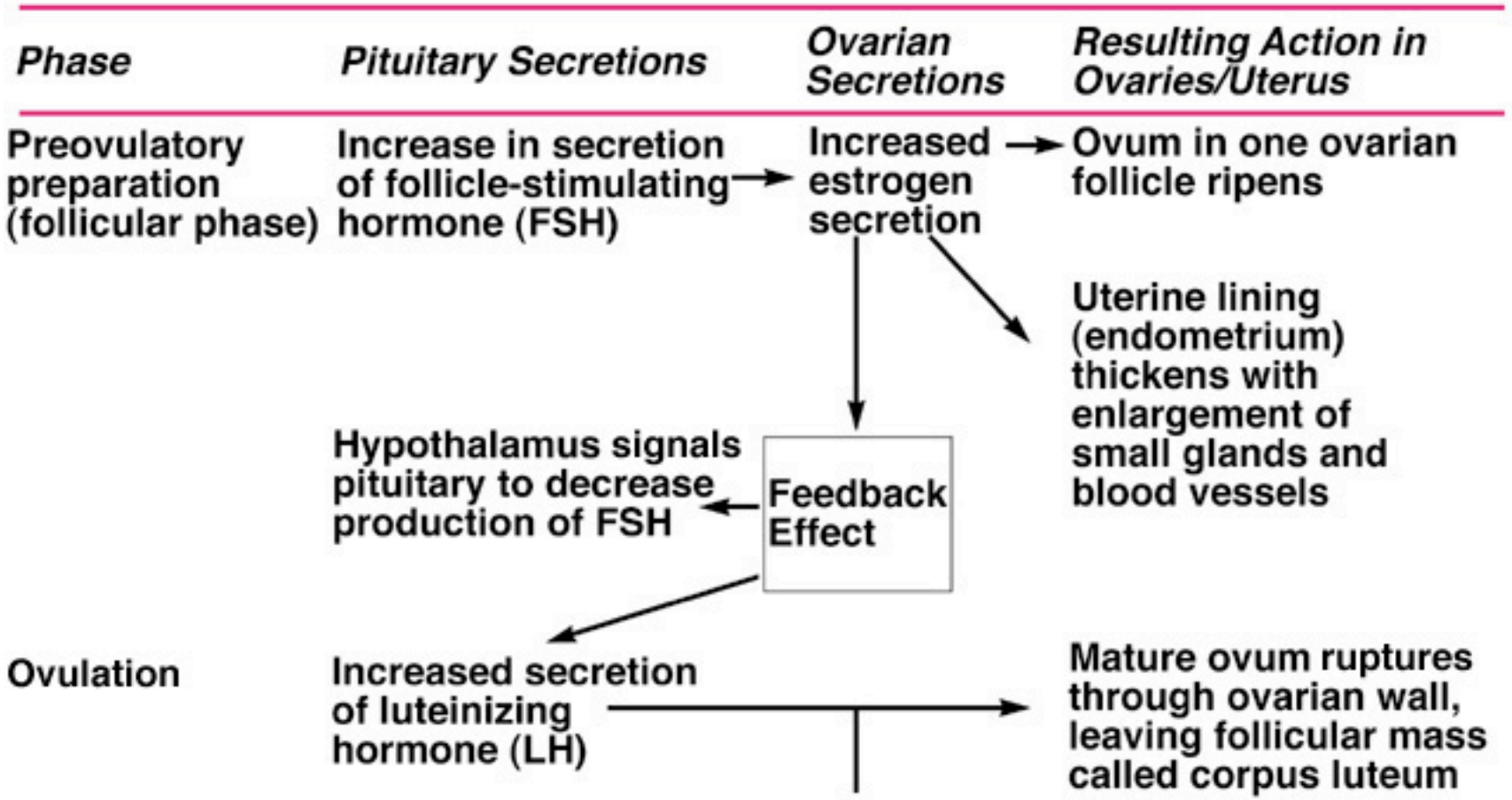
Summary of the Menstrual Cycle



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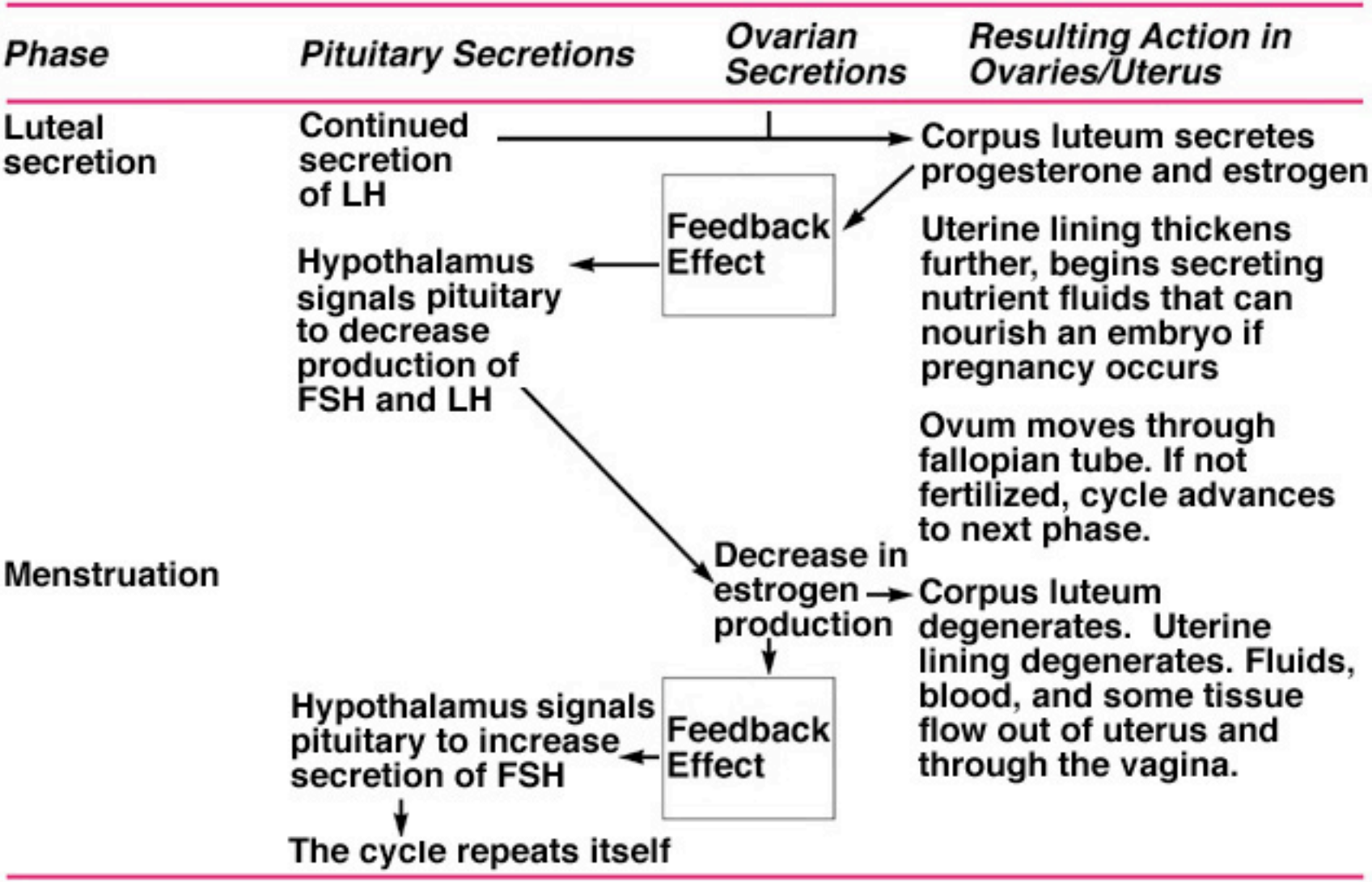

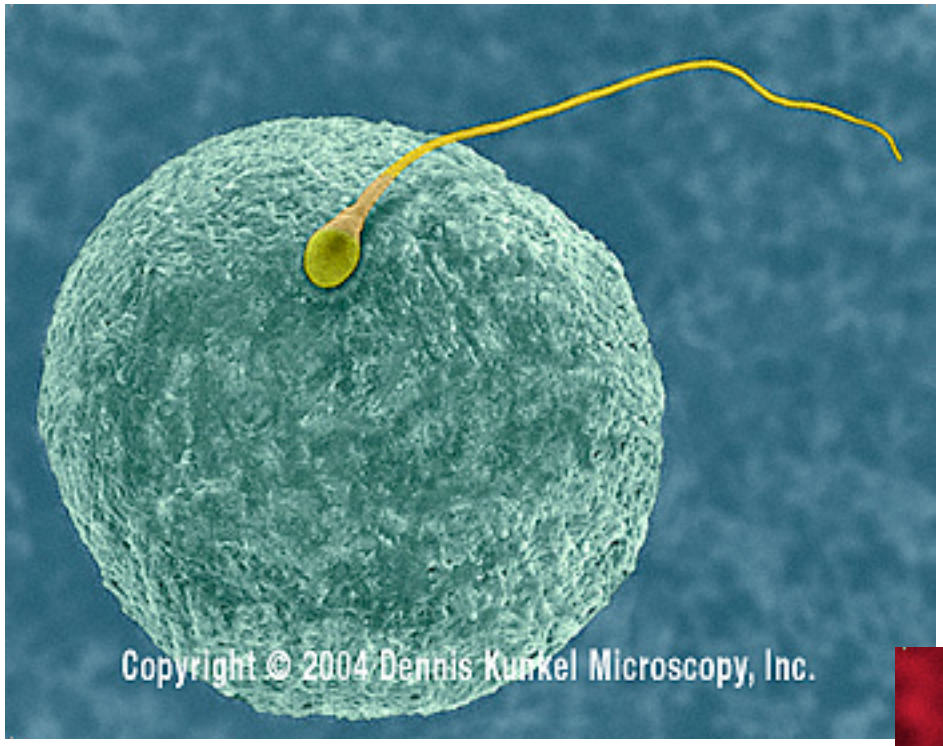
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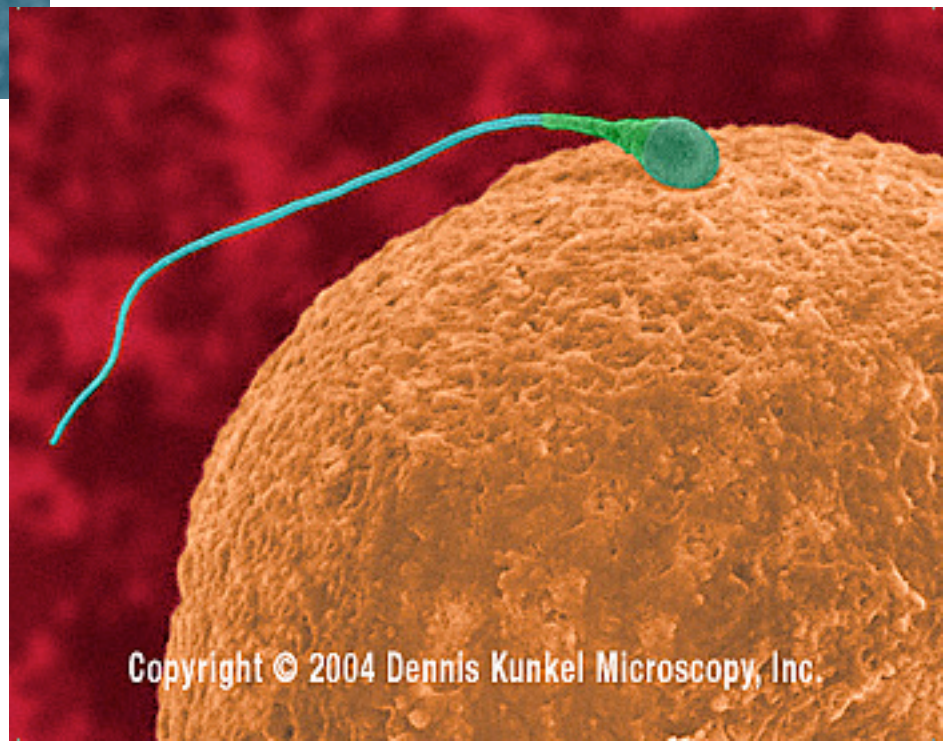
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