

EARLY SEXUAL DEVELOPMENT

revised 12 April 2016

Martini's 5th: 1016-1034, 1049-, Martini's 6th: 1047-1114, 7th: 1030-1047, 8th: 1042-1051, 9th: 1032-1049, 10th: 1051-

Reproductive System purpose: generate haploid gametes, join them, nourish progeny till birth, then infancy. Evolution benefits from diversity...

EMBRYOLOGY: (p. 1053)

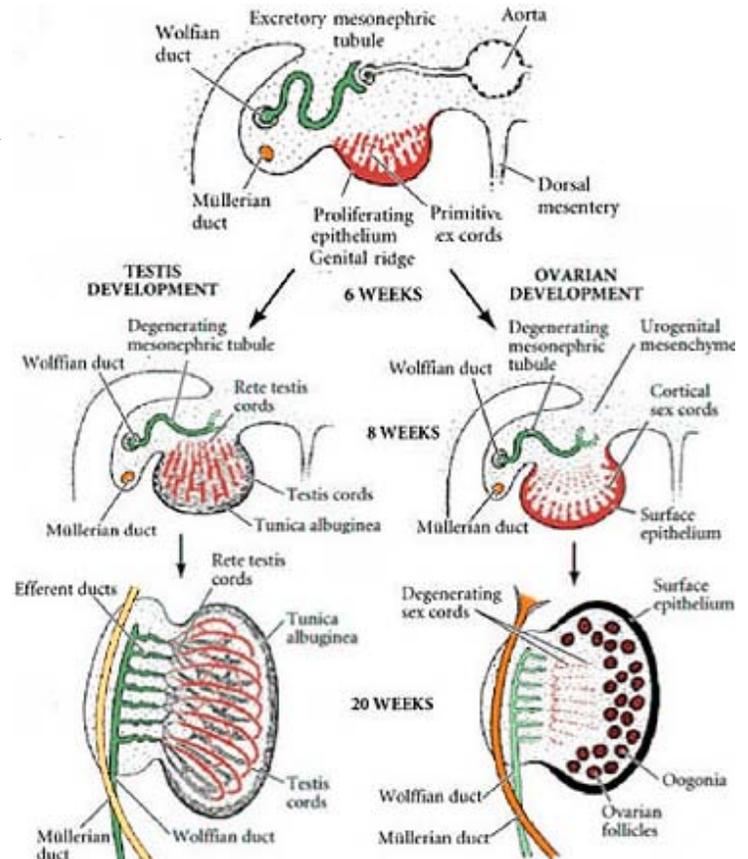
genital ridges form medial to **mesonephros** (embryonic kidneys).

Germ cells migrate from yolk sac near allantois (away from development) into genital ridges.

primordial gonads develop from genital ridges

8th week: Primordial gonads differentiate to **ovaries** or **testes**.

Embryonic structures: differentiate after 8th wk		Effect of Testosterone	No Testosterone
genital ridges form primordial gonad		medulla develops into testes	cortex develops into ovaries
mesonephric duct	(Wolffian duct)	vas deferens	degenerates
paramesonephric duct	(Mullerian duct)	degenerates	fallopian tube
External genitalia:	traits:	testosterone	no testosterone
anterior genital tubercle	(erectile)	glans penis	clitoris
urethral folds	(mucous memb)	penile urethra (close to form tube)	labia minora
labioscrotal swellings	(keratinized, pigmented)	scrotum (dev into pouch)	labia majora



Testes require 3°C lower temperature to function: descend into scrotum, guided by **gubernaculum**, dragging with them vessels, nerves, peritoneum

SPERMATOGENESIS: (1057-1060) (requires ~34C), testes hung in scrotum. **spermatogonia** (primitive germ cells) on basement membrane, mitosis pushes daughter cell away, becomes **1' spermatocytes** which begin meiosis I **2' spermatocytes** meiosis I completed, enter meiosis II **spermatids** develop: (p 1060) lose cytoplasm **develop acrosome** grows flagellum (centriole's role) Nourished by **Sertoli cell**, rich in glycogen, shed, mature for 2 weeks in epididymus, 64 days to complete **spermatozoa**

SPERMATIC CORD: (1035)

- arteries from midlumbar region
- veins (L gonadal vein into L renal vein)
- lymphatics
- nerves
- vas deferens** possessing **cilia**
- fold of peritoneum encircles above, 2x layer results

Sperm anatomy: (p 1060)

- acrosome, head
- mitochondrial sheath
- main piece of flagellum
- end piece of flagellum

Sperm are motile for 3 days, **fertile for only 24 hrs.**

Here is an animation showing the differential development of the male and female gonads from the primordial gonad:

http://php.med.unsw.edu.au/embryology/index.php?title=BGDB_Sexual_Differentiation_-_Early_Embryo

capacitation: spermatozoa become motile when mixed with seminal vesicle secretions

