

ÜROGENİTAL SİSTEM

A – Üriner Sistem

B – Genital Sistem

Metanefrik tip böbrekte “nefron” yapısı

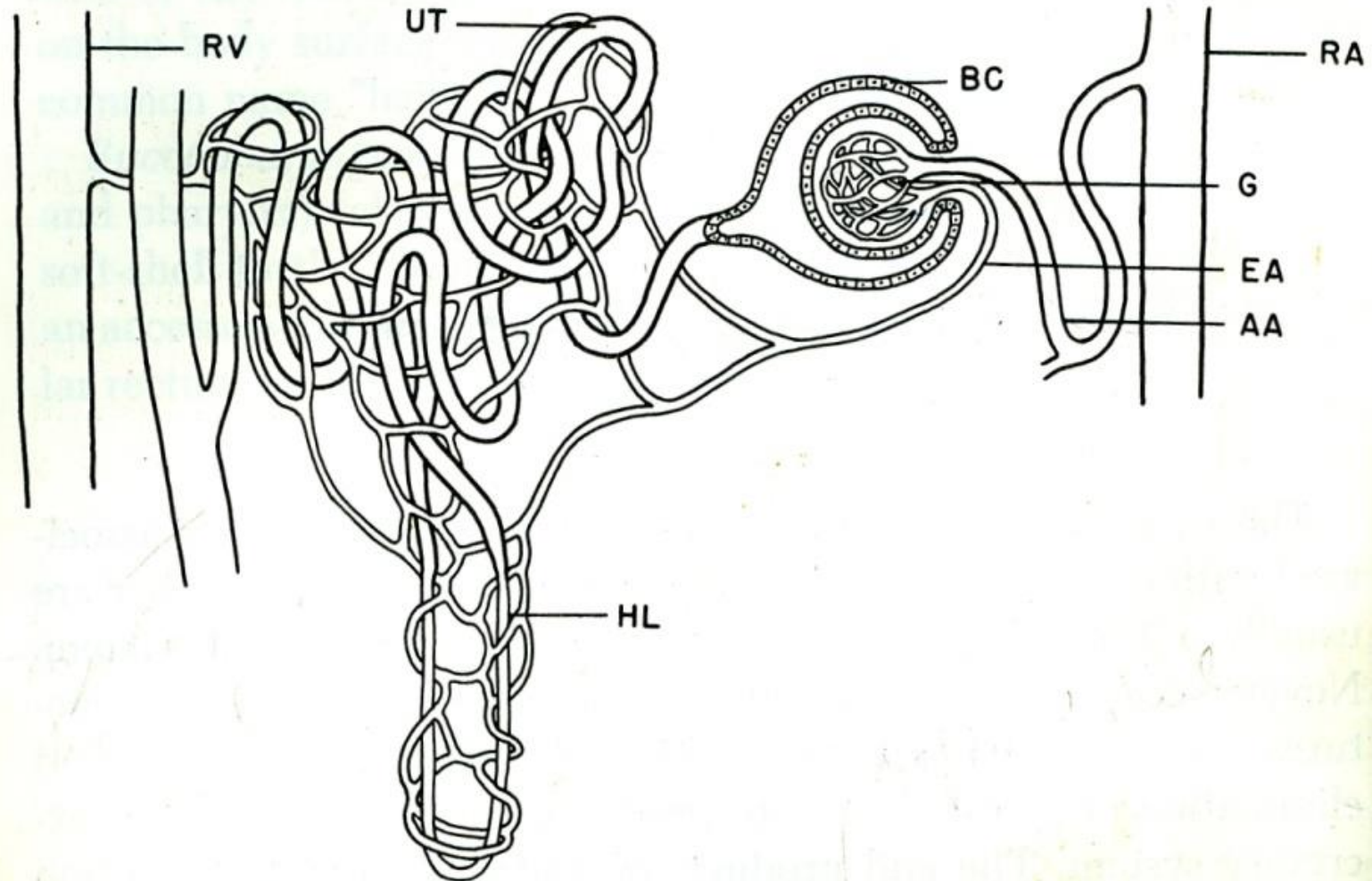
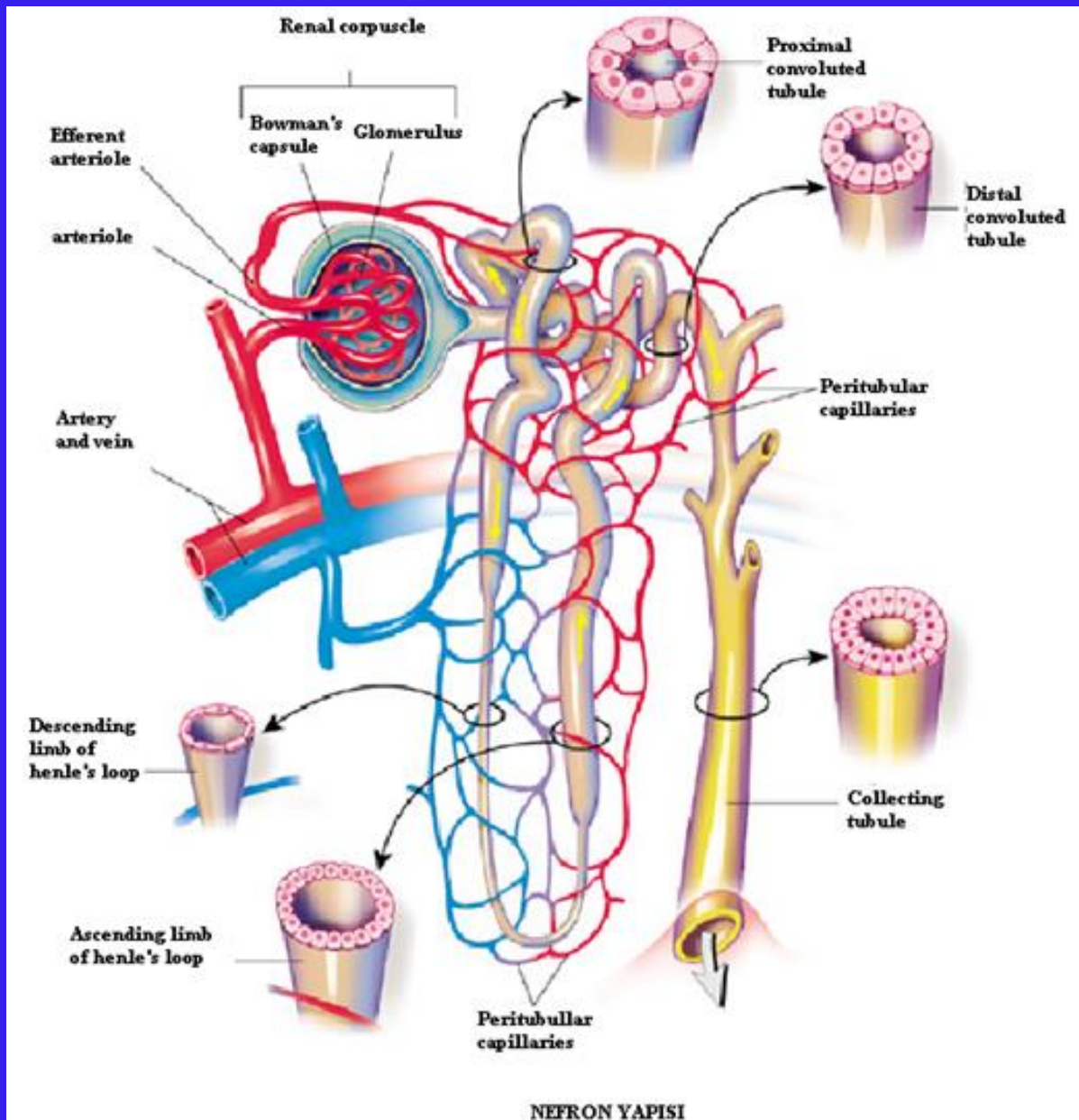


FIG. 10-1. The structure of the Malpighian body in the metanephric kidney. RA, renal artery; BC, Bowman's capsule; G, glomerulus; EA, efferent arteriole; AA, afferent arteriole; UT, uriniferous tubule; RV, renal vein; HL, loop of Henle.



Metanefrik tip böbrekte “nefron” yapısı

Bowman kapsülü ile çevrili Glomerulus

Renal korpüskül

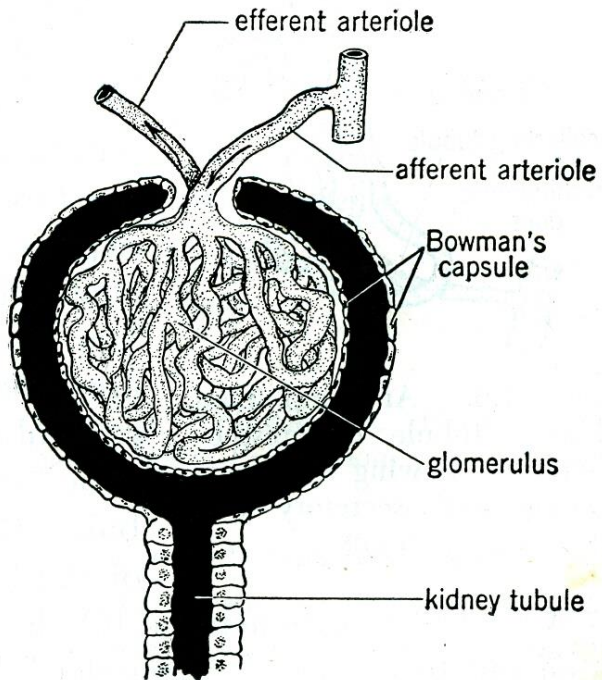
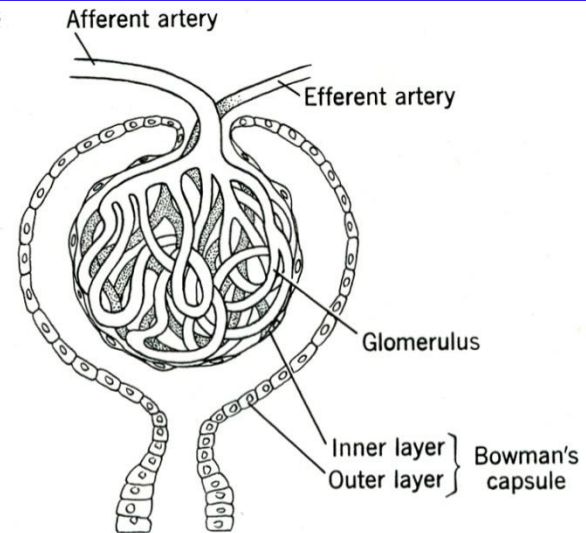


FIG. 7.5. A renal corpuscle.



(a)



(b)

Figure 4. (a) Glomerulus surrounded by Bowman's capsule; (b) glomerulus stretched out.

Nefrogenik mezodermin akibeti

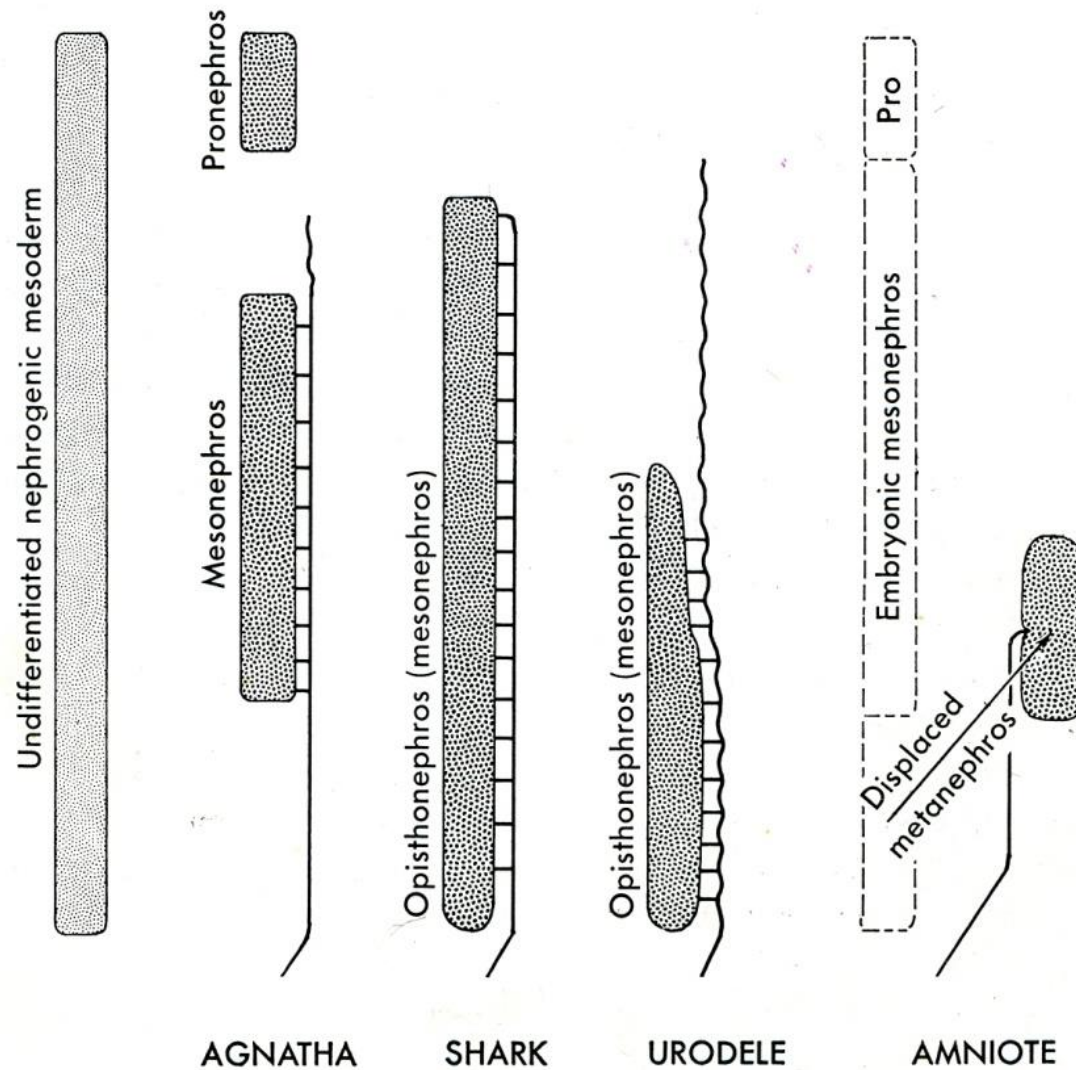


Fig. 14-5. Fate of the nephrogenic mesoderm in representative vertebrates.

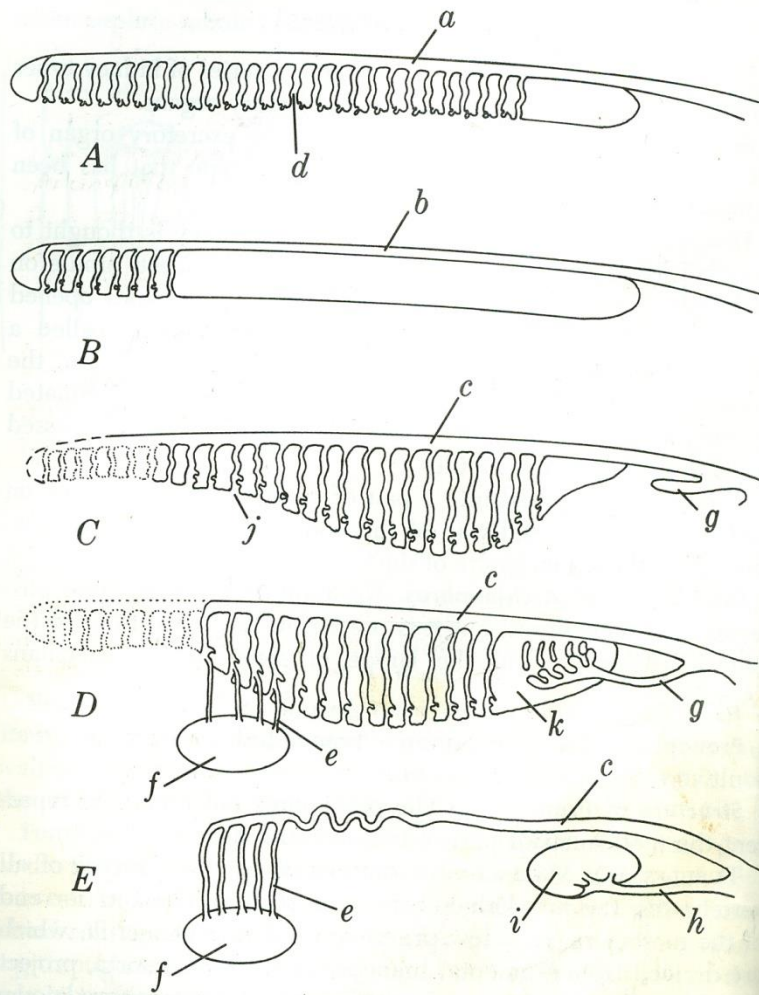


FIG. 10-2. Evolution of vertebrate kidneys and ducts. A, archinephros; B, pronephros; C, mesonephros; D, opisthonephros (male); E, metanephros (male): a, archinephric duct; b, pronephric duct; c, Wolffian duct; d, archinephric tubule; e, efferent ductule; f, testis; g, developing ureter; h, ureter; i, metanephric kidney; j, nephrostome; k, metanephric portion of opisthonephros. In females the efferent ductules do not pass to the gonads and the Wolffian ducts become vestigial in forms with metanephric kidneys. (Redrawn from Hyman, *Comparative Vertebrate Anatomy*, 2nd ed., University of Chicago Press, 1942. Copyright 1922 and 1942 by the University of Chicago.)

Omurgalılarda böbrek ve kanallarının Evrimi

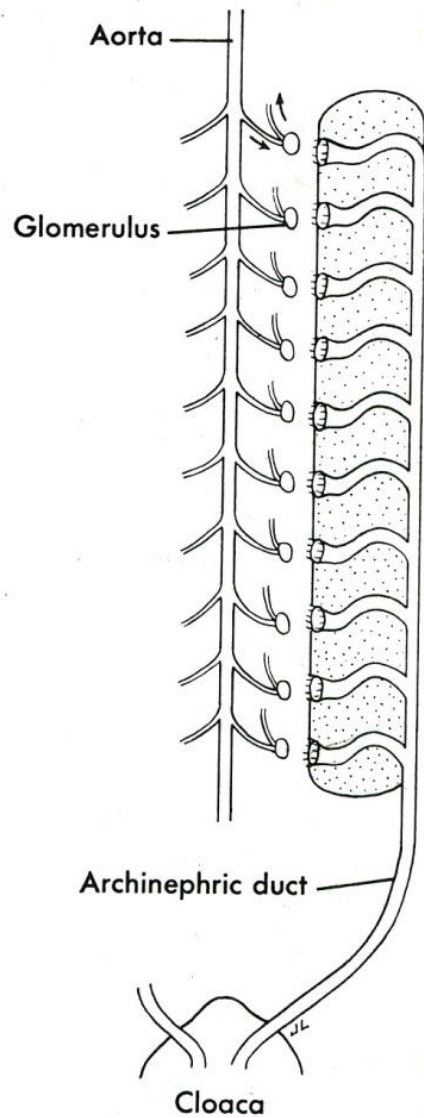
A. Arkinetroz

B. Pronefro

C. Mesonefro

D. Opisthonefro (erkek)

E. Metanetro (erkek)



ARCHINEPHROS

Fig. 14-4. Hypothetical primitive kidney.

Arquinefrik tip böbrek – Hipotetik

Omurgalı böbreği temel yapısı (Şematik)

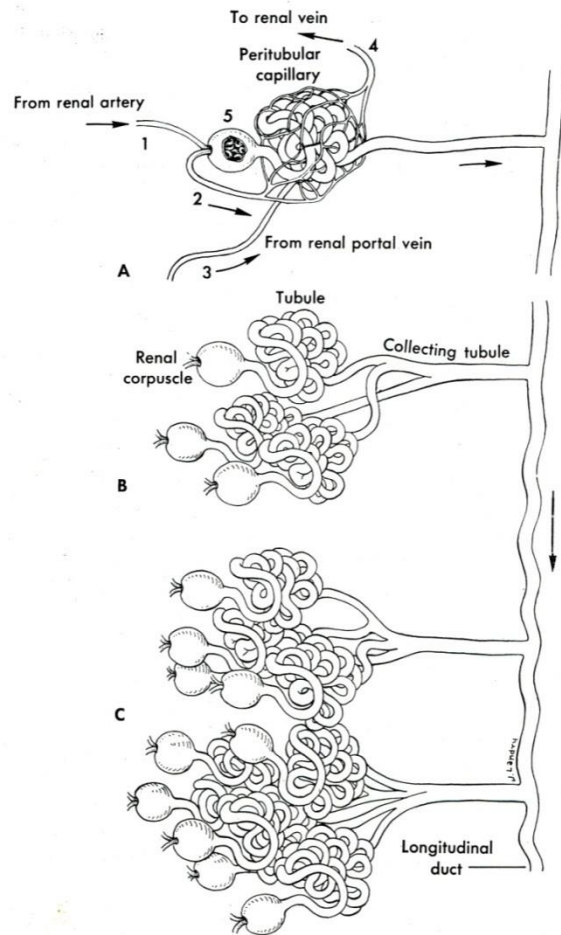


Fig. 14-1. Basic structure of vertebrate kidney, schematic. In **A**, an afferent glomerular arteriole, **1**, penetrates a Bowman capsule, **5** (part of the wall removed), to form a glomerulus. The glomerulus plus the capsule constitute a renal corpuscle. Emerging from the capsule is an efferent glomerular arteriole, **2**, that terminates in a peritubular capillary bed. Also contributing to the peritubular capillaries is a venule, **3**, from the renal portal system. Emerging from the peritubular capillaries is a renal venule, **4**. **B**, Replication of renal corpuscles in a single body segment. **C**, The increased number of tubules per segment disrupts the metamerism of the nephrogenic mesoderm.

Kapsüllenmiş Pronefrik böbrek

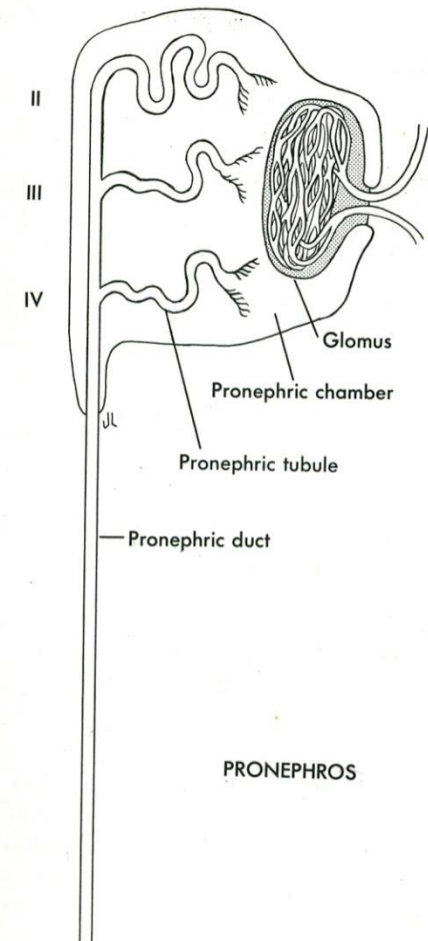
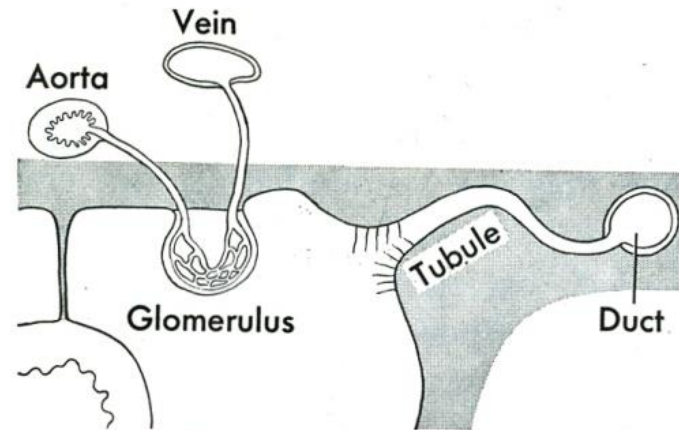
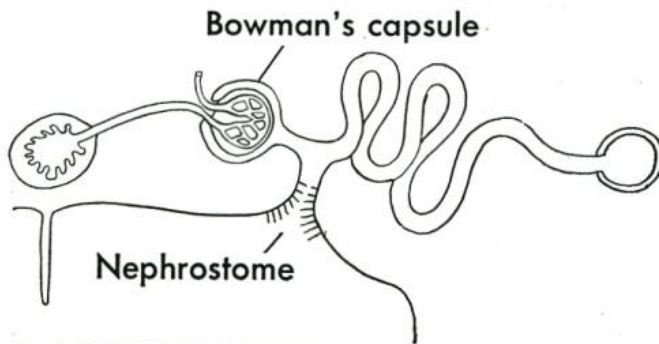


Fig. 14-3. Encapsulated pronephric kidney of the 15 mm. larval frog, schematic. **II**, **III**, and **IV**, levels of the second, third, and fourth somites. The next tubule to form will be a mesonephric tubule at the level of somite VII. The glomus represents three fused glomeruli.

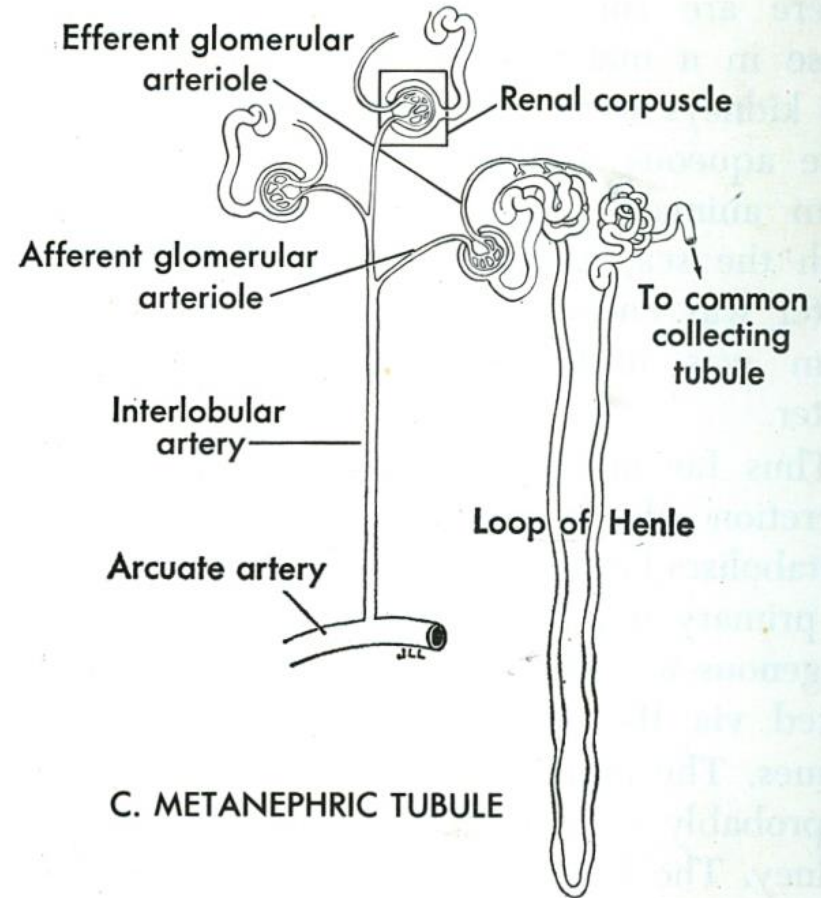
Özelleşmiş böbrek tubülleri ve glomerulus yapısı



A. ARCHINEPHRIC TUBULE



B. ANTERIOR TUBULE



C. METANEPHRIC TUBULE

Fig. 14-2. Increasingly specialized kidney tubules and associated glomeruli.

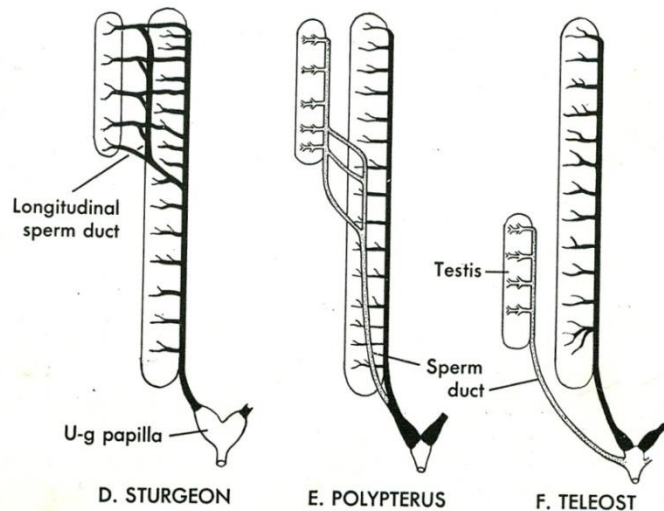
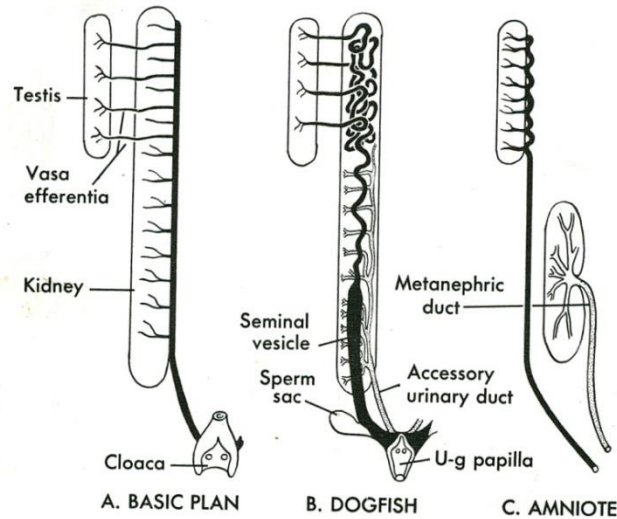


Fig. 14-21. The mesonephric duct (black) as a carrier of sperm and urine. **A**, Basic plan, carrying both sperm and urine. **B**, Carrying little urine, chiefly a spermatid duct. **C**, Carrying sperm only. **D** to **F**, Increasing tendency toward a separate sperm duct, the mesonephric duct carrying urine. **U-g**, Urogenital papilla.

Mesonefrik kanal –
Sperm ve idrar taşıyıcısı olarak

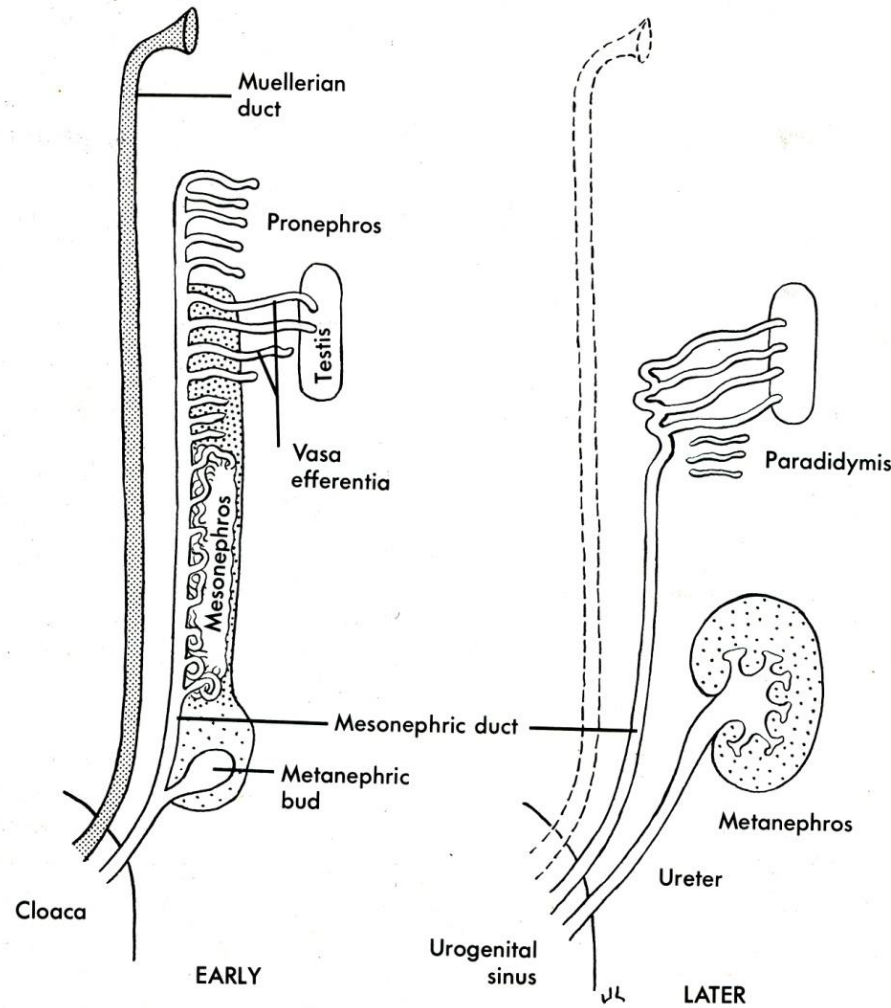


Fig. 14-19. Urogenital system of developing male amniote. In the earlier stage (left) some of the kidney tubules have invaded the testis to become vasa efferentia. In the later stage (right) the mesonephros has regressed except for remnants (paradidymis), the muellerian duct has regressed, but the mesonephric duct remains as a spermatic duct.

Erkek Amniot'ta Urogenital sistemde gelişime bağlı değişiklikler

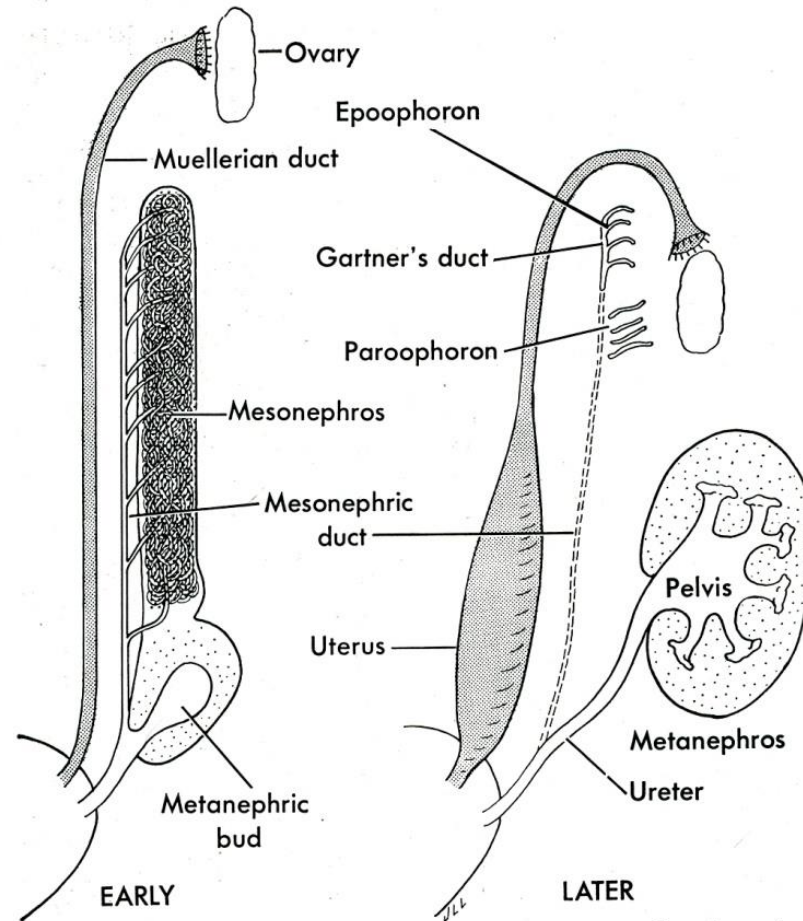


Fig. 14-9. Developmental changes in the urogenital system of a female amniote. In the early stage (left) the mesonephric kidney and duct are present, and the metanephric bud has formed. The undifferentiated muellerian duct is present. In the later stage the mesonephric kidney and duct have regressed, and the muellerian duct has differentiated to form a female reproductive tract.

Dişi Amniott'ta Urogenital sistemde gelişime bağlı değişiklikler

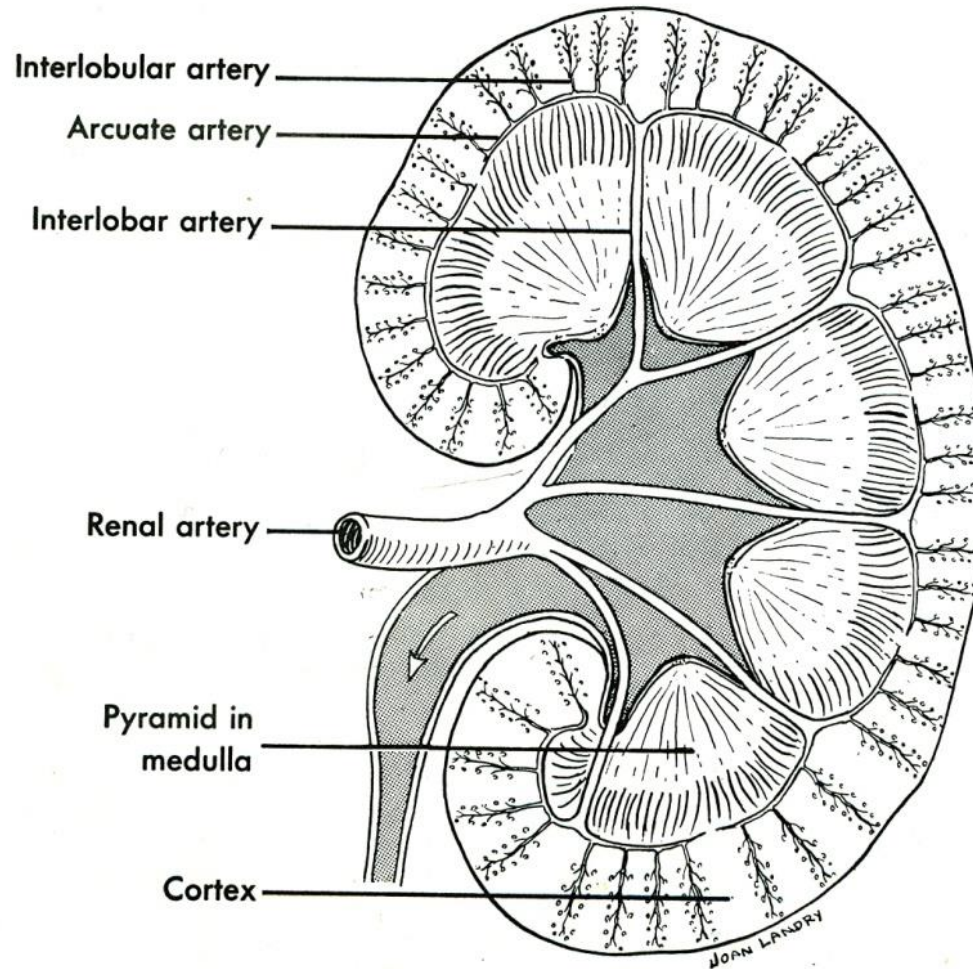
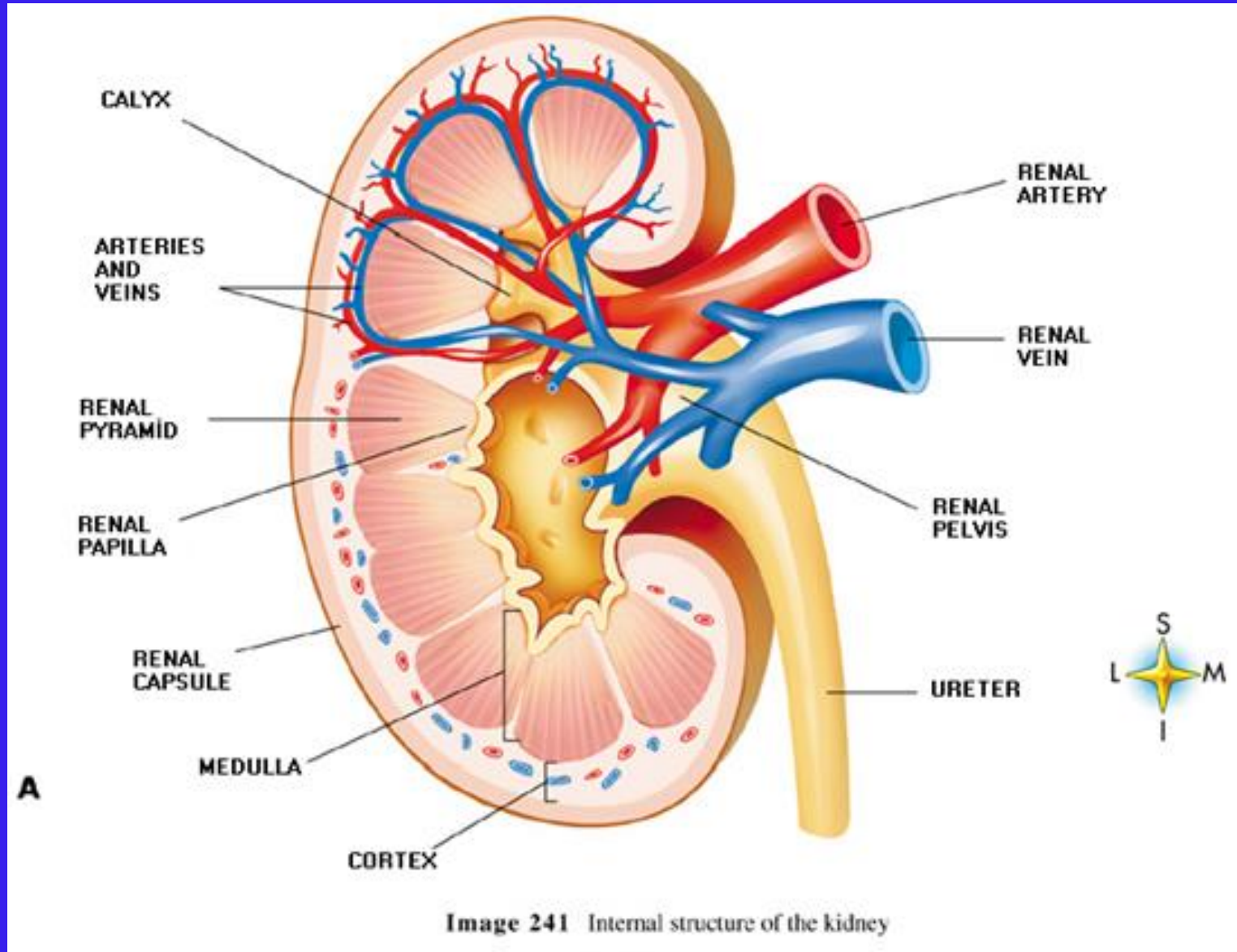


Fig. 14-13. Representative mammalian kidney, sagittal section. The renal vein has been removed. Gray area indicates the pelvis and ureter. The glomeruli are confined to the cortex. The loops of Henle extend into the pyramids of the medulla along with the common collecting tubules. The kidneys of domestic cats have only one pyramid.

Memeli böbreği – Şematik (Sagittal kesit)

Memeli böbrek yapısı



Omurgalıların yaşam evrelerinde görülen böbrek tipleri

		Arkinetroz	Pronefrozo	Opisthonefrozo	Mesonefrozo	Metanetrozo
Agnatha	Myx.	Larva	Ergin	Ergin		
	Petr.		Embryo	Ergin		
Chondrichthyes			Embryo	Ergin		
Osteichthyes			Embryo	Ergin		
Amphibia		Larva-Coeciliidae	Embryo	Ergin		
Reptilia			Embryo		Embryo	Embryo+Ergin
Aves			Embryo		Embryo	Embryo+Ergin
Mammalia			Embryo		Embryo	Embryo+Ergin

İdrar kesesi

Cyclostomata (-)

Elasmobranchiata (Köpek balığı, vatozlar) (-)

Reptilia (Yılan, timsah, bazı kertenkele (-)

Aves (-)

Diğer omurgalılar [Kemikli balık, Dipnoi, Amfibi, Bazı

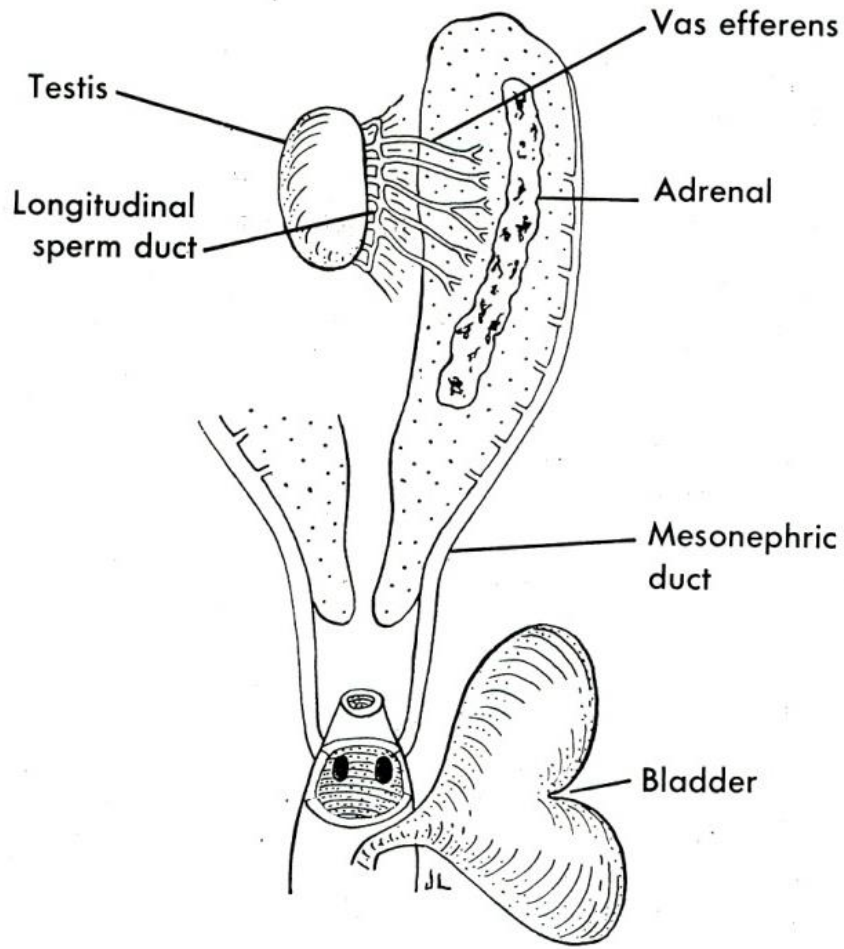
Reptil(+)

Amphibia ve Reptilia :

İdrar → Mesonefrik kanal → Kloak → İdrar kesesi

Memeli :

İdrar → Mesonefrik kanal → İdrar kesesi → Üretra



ANURAN

Fig. 14-15. Urogenital system and adrenal of a male frog, ventral view.

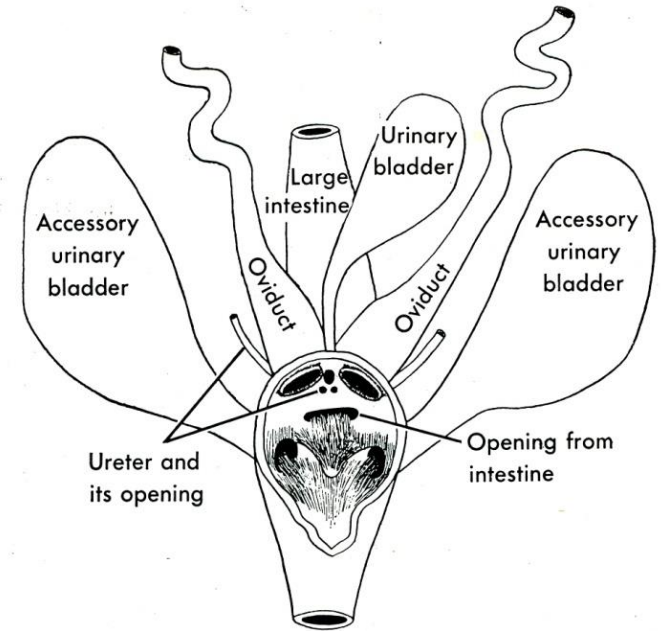
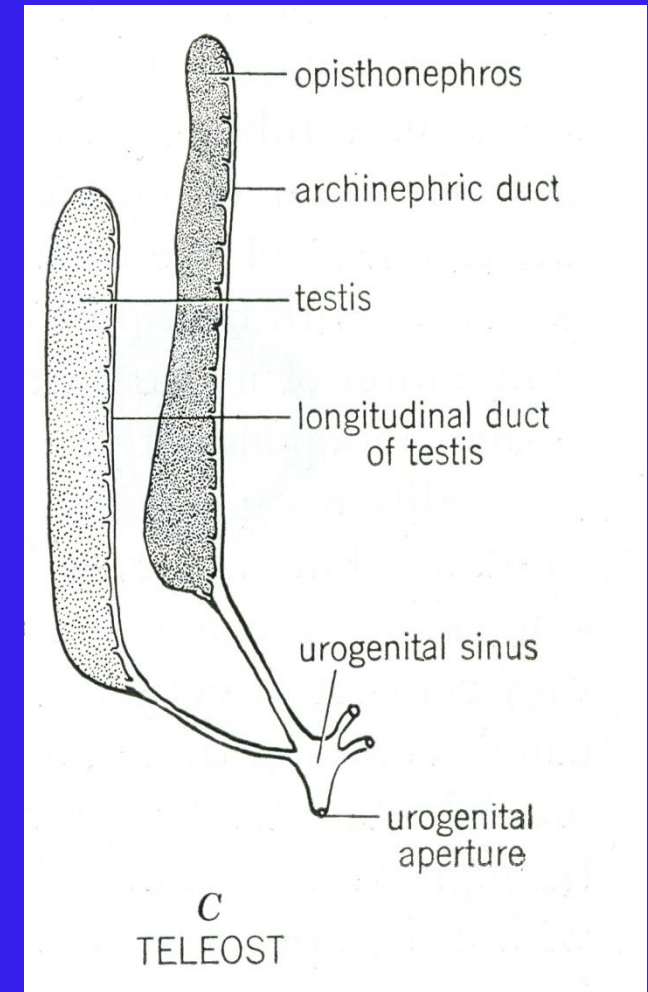
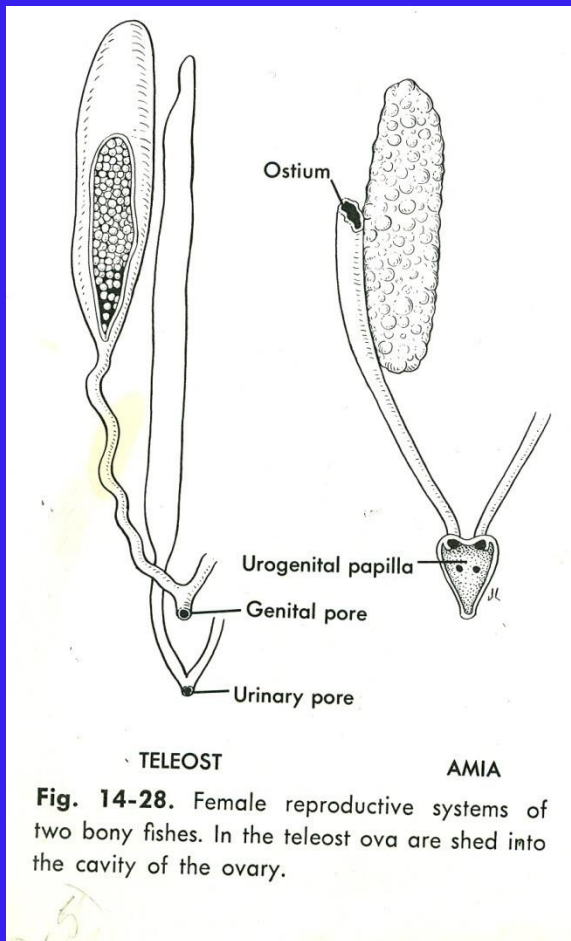


Fig. 14-30. Cloaca of a female turtle, ventral view.

Dişi kaplumbağa – Kloak (ventralden)

Erkek kurbağa'da ürogenital sistem



Ürogenital sistem – Teleostei (Dişi),
Holeostei –Amia (Dişi)

Ürogenital sistem - Erkek

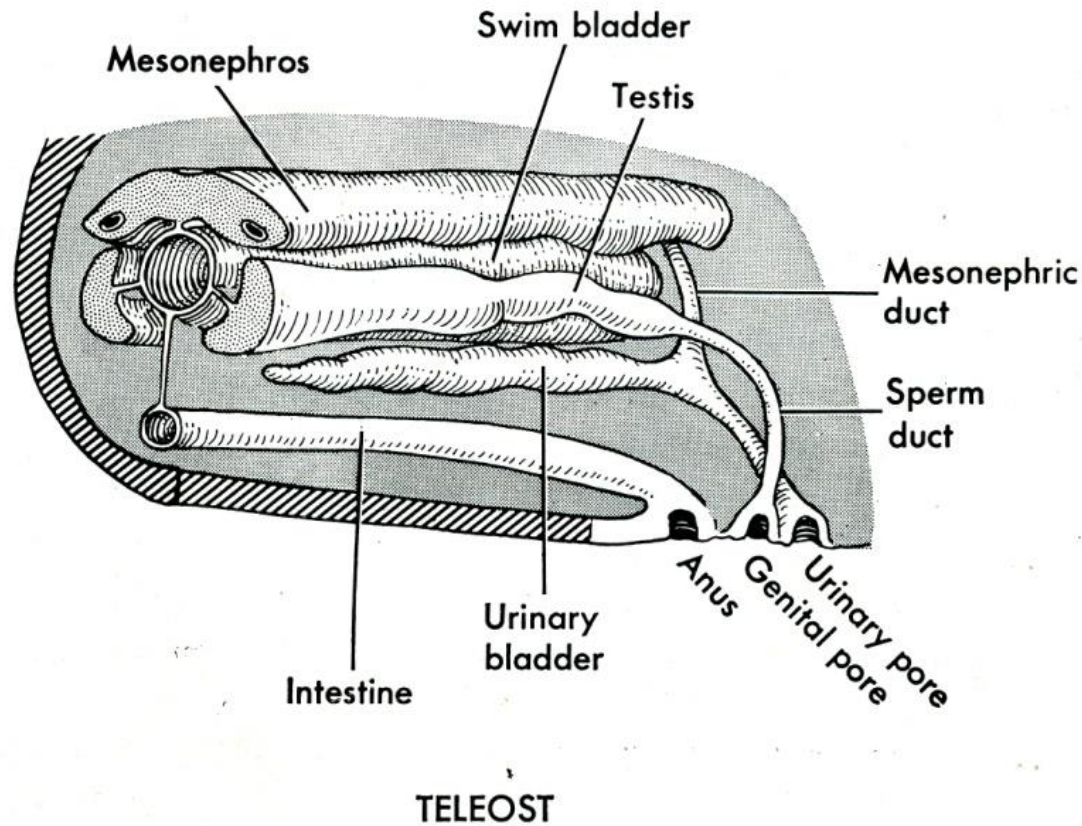


Fig. 14-14. Caudal end of urogenital system of a male teleost (pike), left lateral view. The urinary bladder arises as a bud off the kidney duct. Note absence of a cloaca as a result of having become increasingly shallow during embryonic life. (Redrawn from Goodrich.¹²)

**Kemikli balık – Ürogenital sistem (kaudal uç)
Erkek**

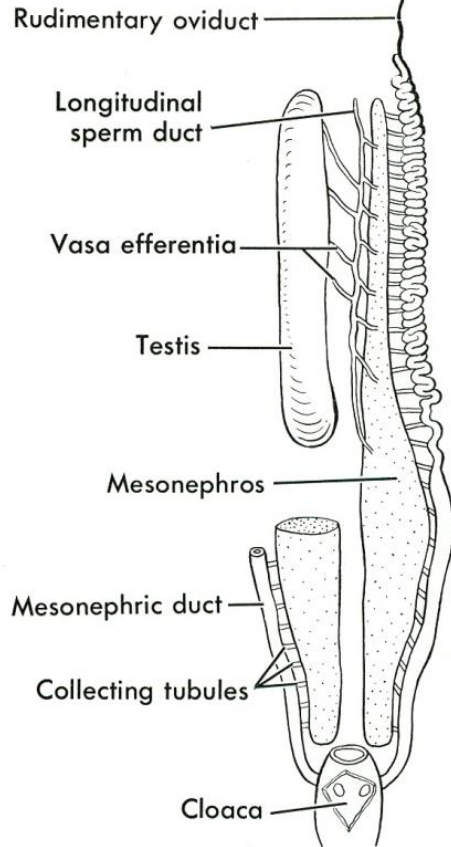
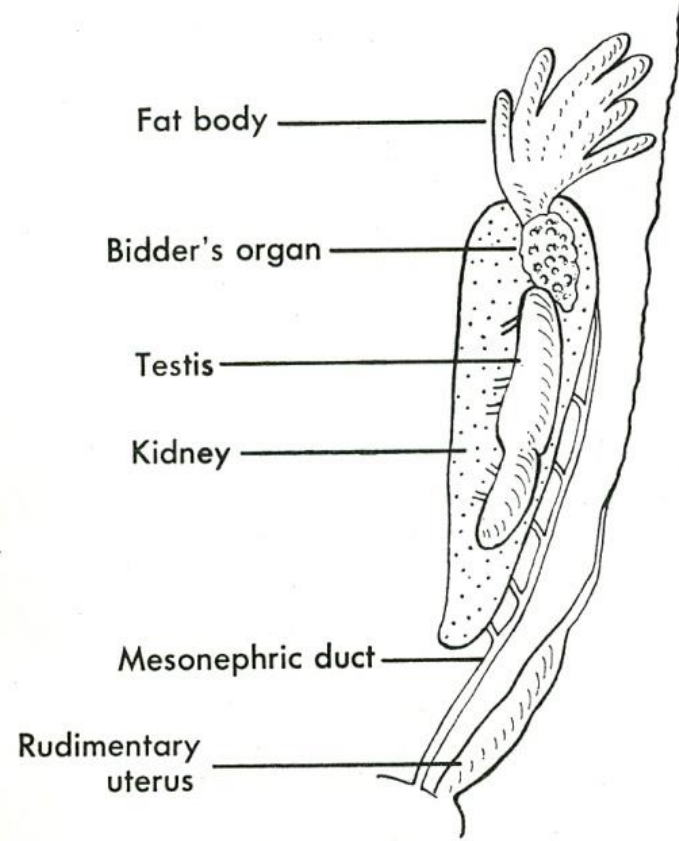


Fig. 14-7. Urogenital system of male *Necturus*. The narrow cephalic end of the kidney serves for sperm transport and is sometimes called epididymis.

***Urodela (Necturus)*'da
Urogenital sistem (erkek)**



MALE TOAD

Fig. 14-26. Bidder's organ and the rudimentary female reproductive tract in a male *Bufo*, ventral view. Only the left organs are illustrated.

**Erkek kubağa (Bufo) da bidder organı
ve rudimenter dişi üreme kanalı**

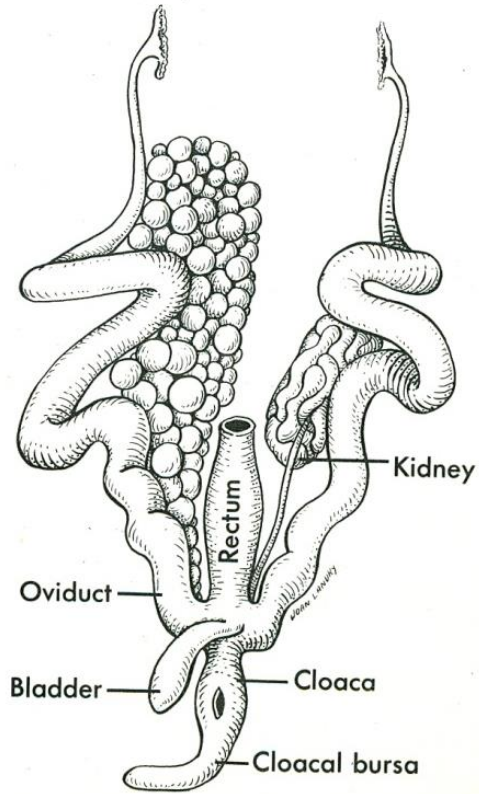


Fig. 14-29. Urogenital system of female turtle, *Trionyx euphraticus*, ventral view. The left ovary has been removed.

**Dişi kaplumbağa'da
Urogenital sistem**

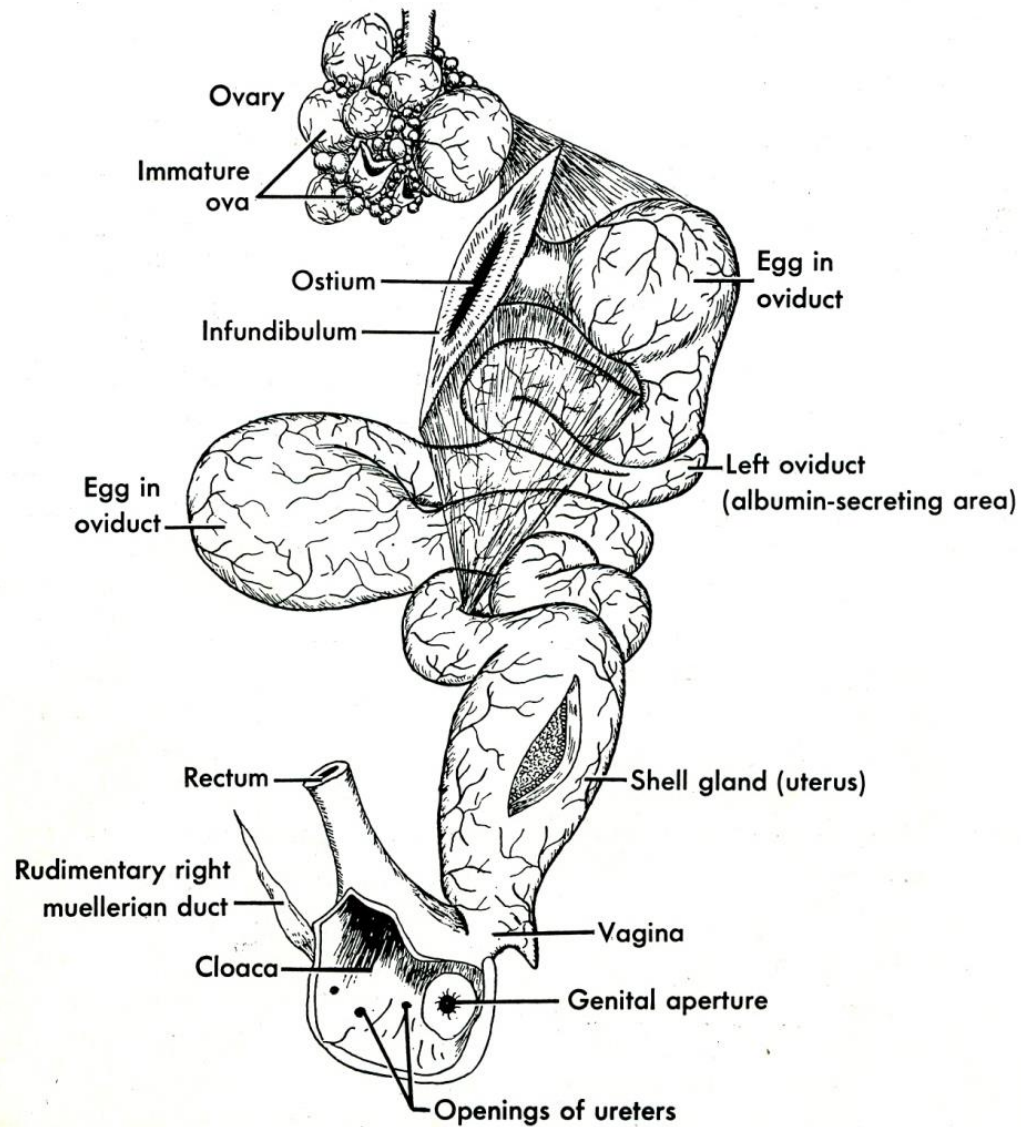
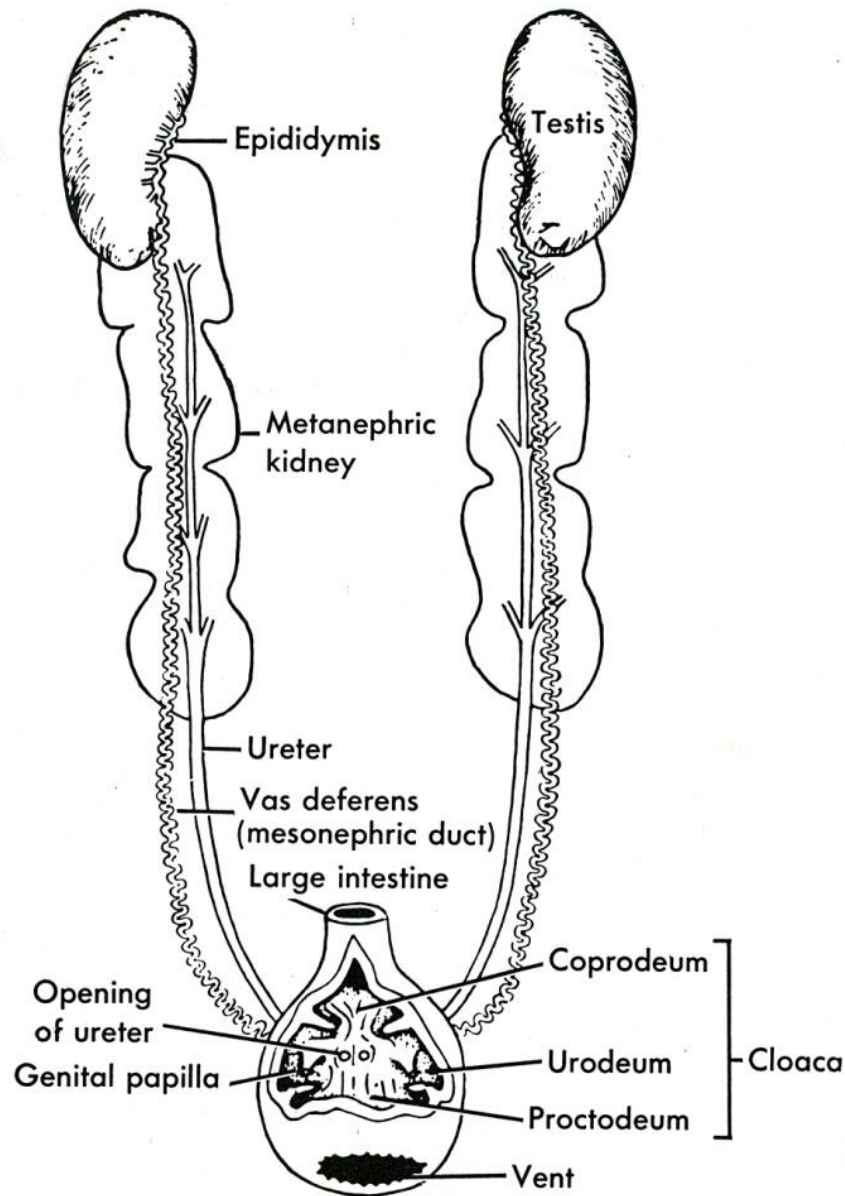


Fig. 14-31. Reproductive tract of a hen. Two eggs in the oviduct is an unusual condition.

Üreme kanalı
Kuş (Tavuk)



Ürogenital sistem Kuş (tavuk)

Fig. 14-12. Urogenital system of a rooster.

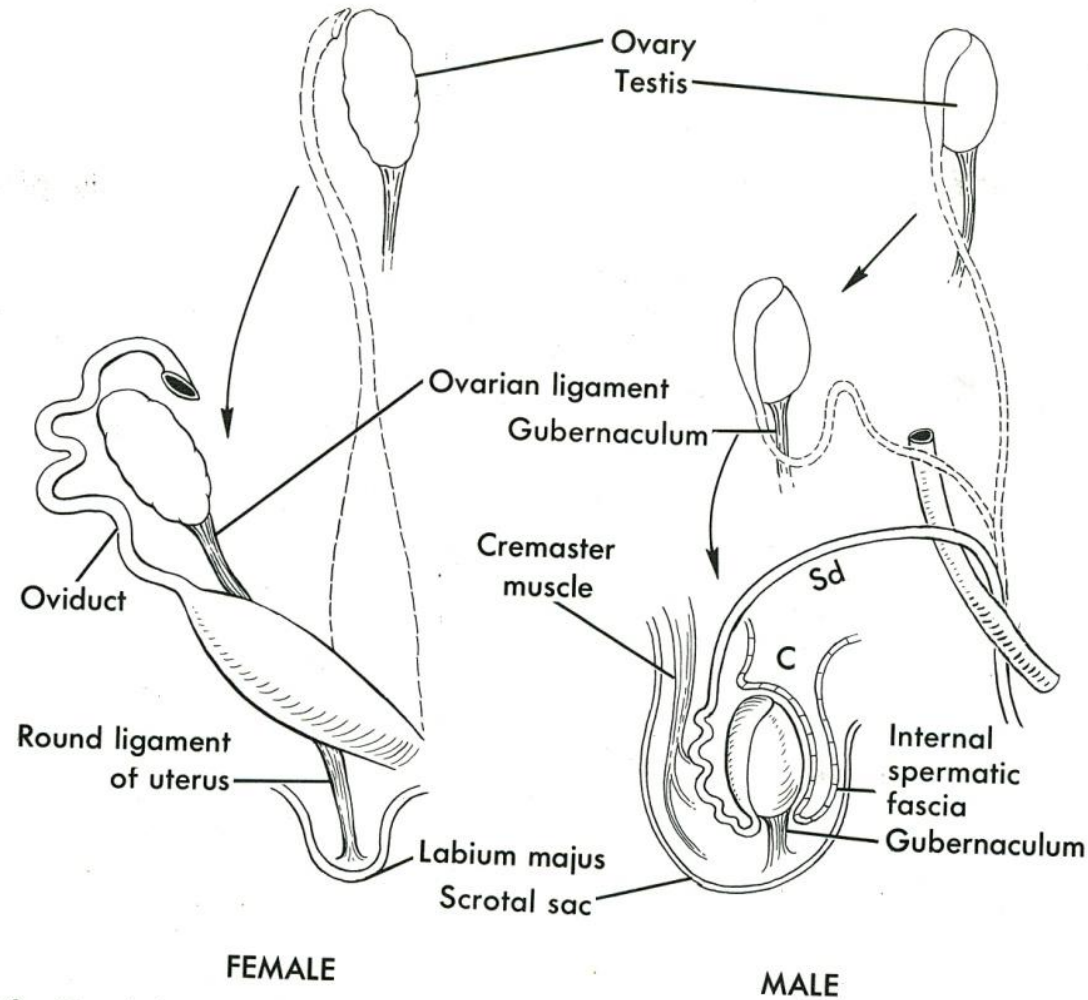
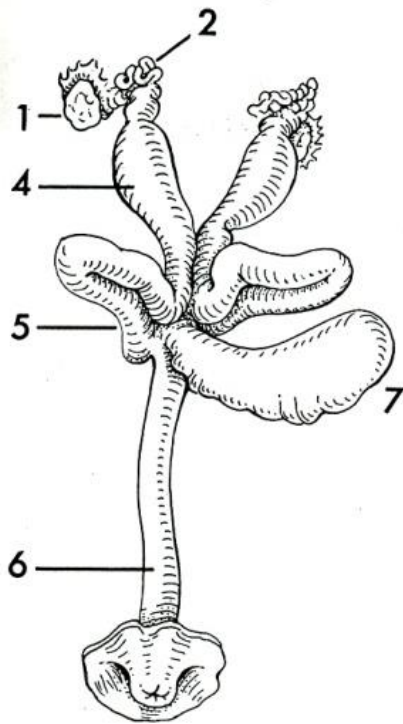


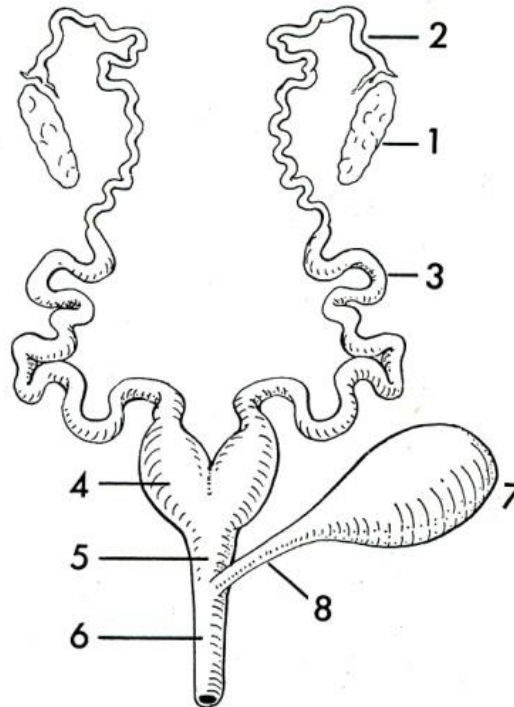
Fig. 14-18. Caudal displacement of mammalian gonads. The ovarian ligament and the round ligament of the uterus collectively are homologous with the male gubernaculum. Arrows indicate the route of translocation of the left gonads, ventral view. **C**, Scrotal recess of coelom; **Sd**, spermatic duct arching over the ureter.

Memeli gonad'larının kaudal'de yer deęiřimi

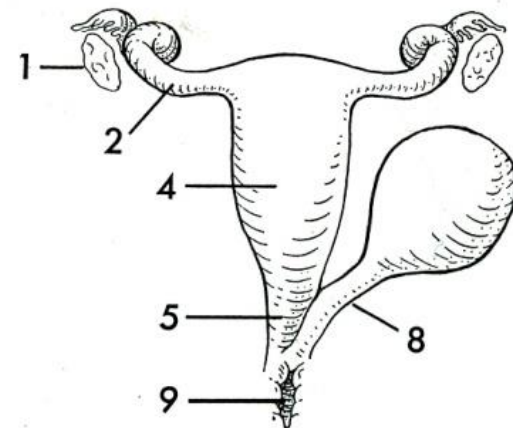
Memelilerde üreme kanalları



Duplex uterus
MARSUPIAL



Bipartite uterus
RABBIT



Simplex uterus
MONKEY

Fig. 14-32. Reproductive tracts of three female mammals. **1**, Ovary; **2**, oviduct; **3**, horn of uterus; **4**, body of uterus; **5**, vagina; **6**, urogenital sinus; **7**, urinary bladder; **8**, urethra; **9**, vestibule of primate. In the primate (rhesus monkey) the urethra opens independently into the vestibule just anterior to the opening of the vagina. The marsupial (redrawn from McCrady⁹⁷) is an opossum, shown also in Fig. 14-33.

Uterus tipleri - Memeli

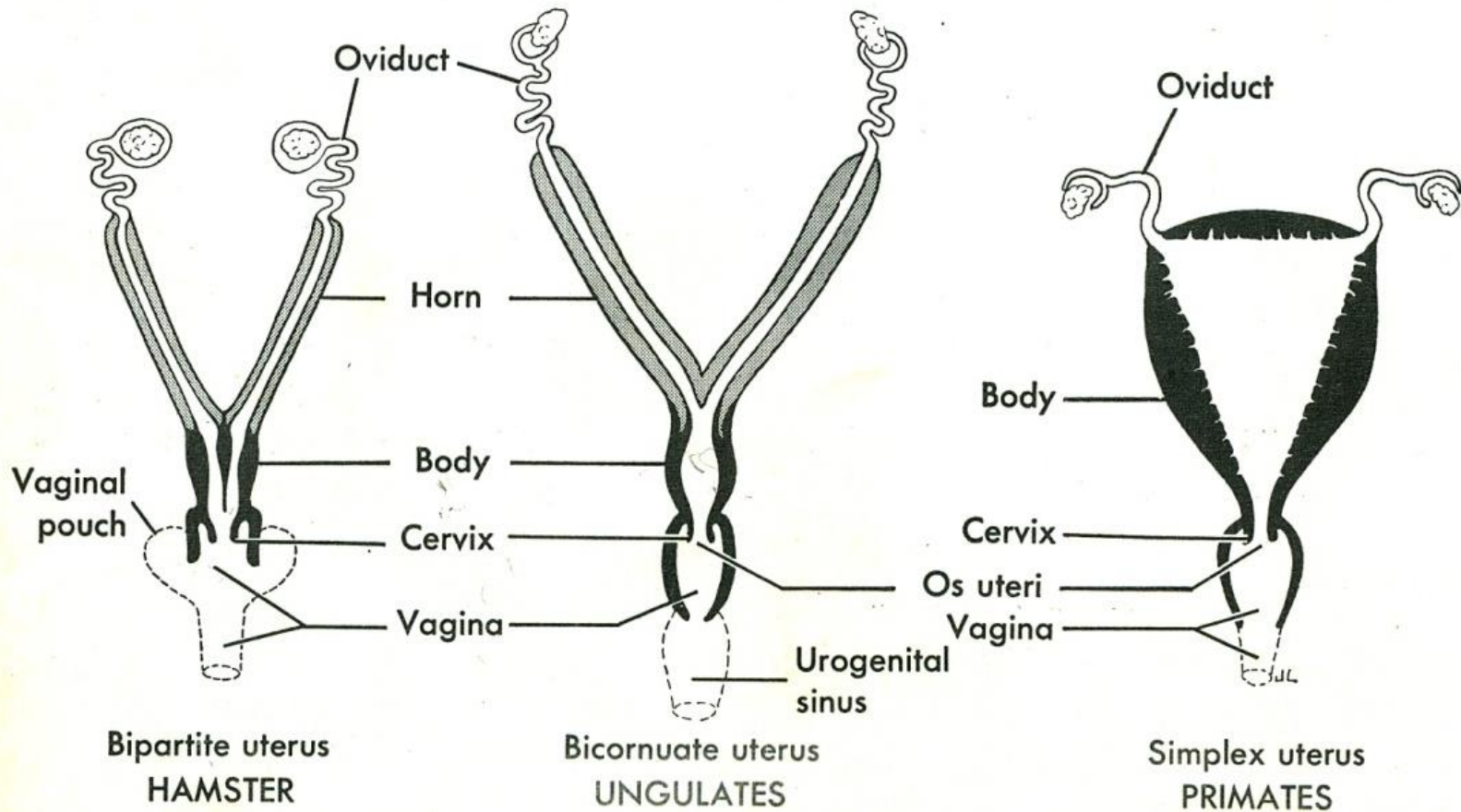
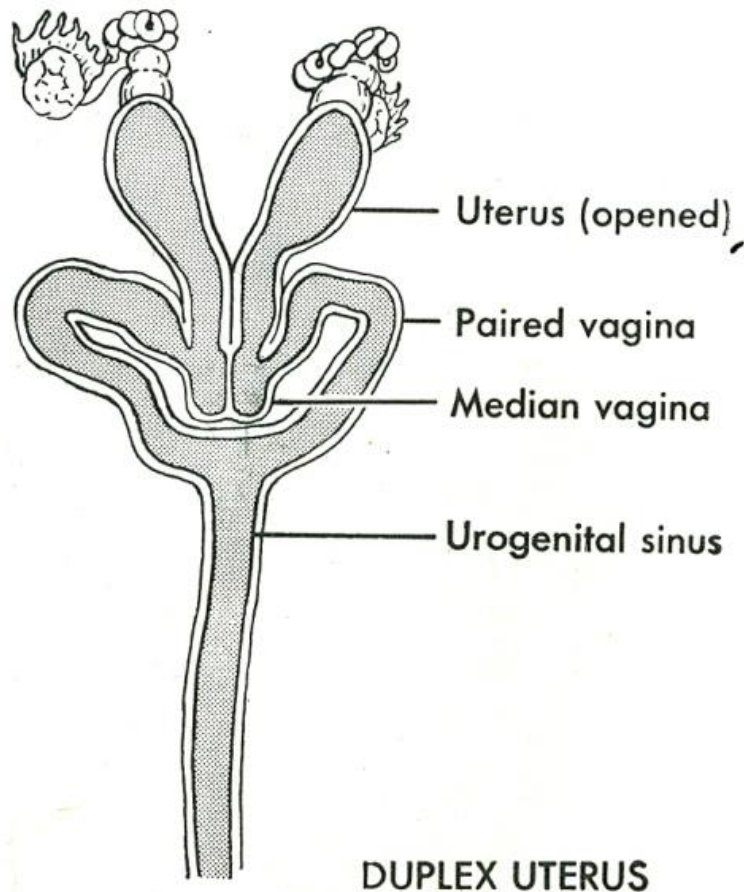


Fig. 14-34. Uterine types among mammals. See also Fig. 14-33. Blackened regions represent fused caudal ends of the muellerian ducts; broken lines represent the cloaca or a derivative thereof.



Dişi üreme sistemi (Dişi üreme kanalları - *Opossum*)

Fig. 14-33. Internal passageways in the female reproductive tract of an opossum. Compare with the external view in Fig. 14-32. The bladder has been omitted.

Yardımcı eşey organları

Memeli - Hamster (Dişi)

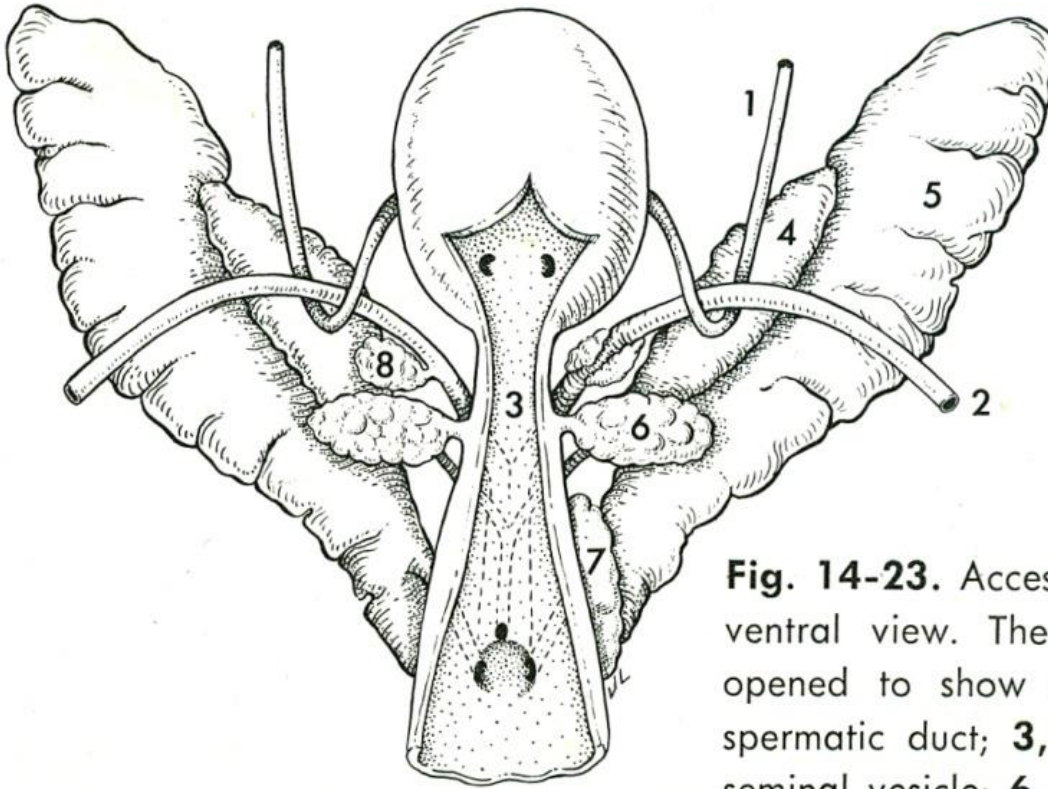
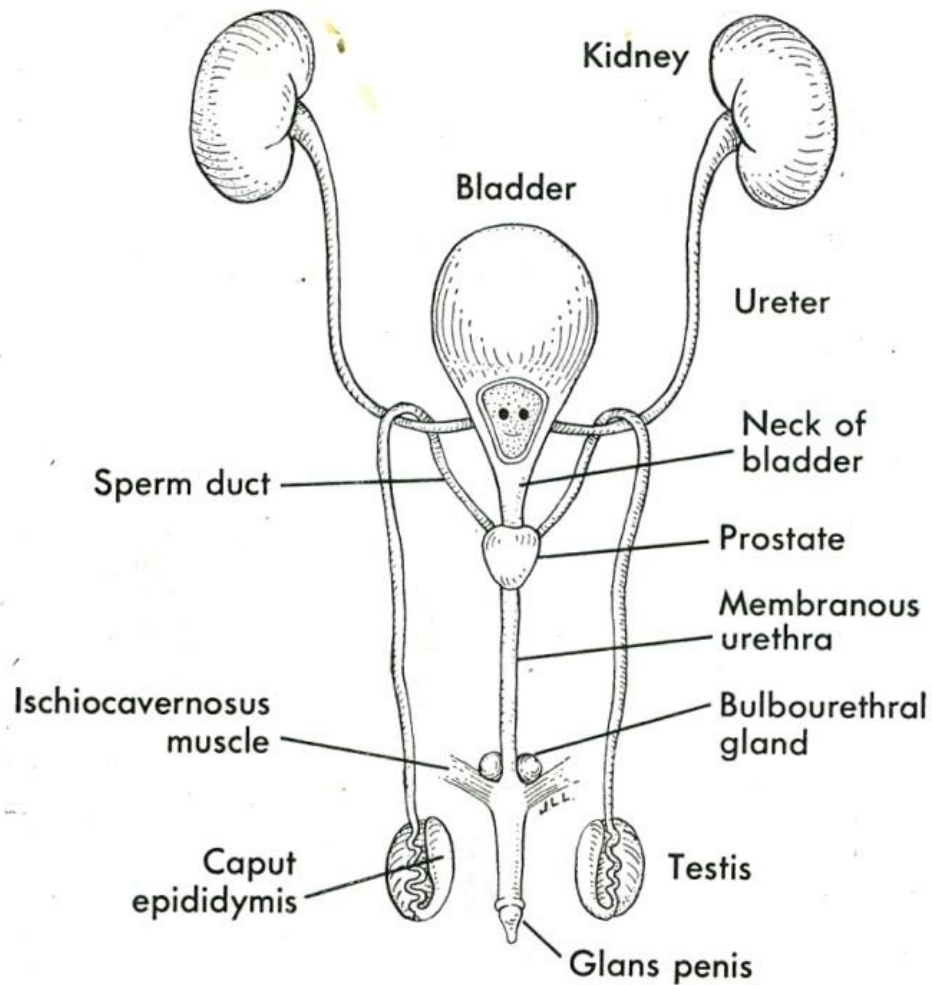


Fig. 14-23. Accessory sex organs of a male hamster, ventral view. The bladder and urethra have been opened to show entrances of ducts. **1**, Ureter; **2**, spermatic duct; **3**, urethra; **4**, coagulating gland; **5**, seminal vesicle; **6**, cranial (dorsal) prostate; **7**, caudal (ventral) prostate; **8**, ampullary gland.



CAT

Fig. 14-22. Urogenital system of a male cat, ventral view.

Ürogenital sistem
Memeli – Kedi (erkek)

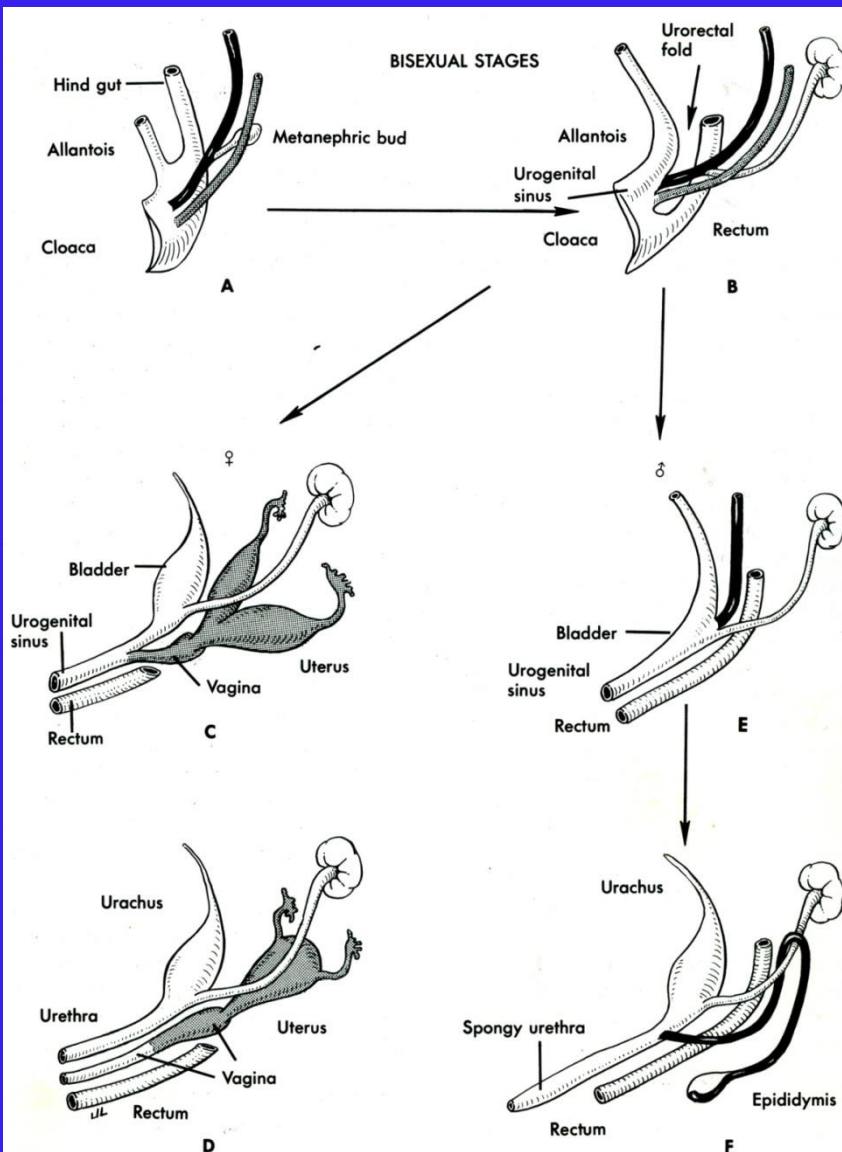


Fig. 14-35. Fate of the mammalian cloaca, müllerian ducts (gray), and mesonephric duct (black). **A** and **B**, Bisexual stages. Only the left müllerian and mesonephric ducts are shown. In **B** the cloaca is becoming subdivided by the urorectal fold into a urogenital sinus ventrally and a rectum dorsally. **C**, Typical adult female mammal. **D**, Female primate. In **C** and **D** the contributions of both the left and right müllerian ducts are shown. **E**, Developing male, showing reorientation of mesonephric and metanephric ducts. **F**, Adult male.

Memelilerde kloak, Müller kanalı ve Mesonefrik kanalın akibeti