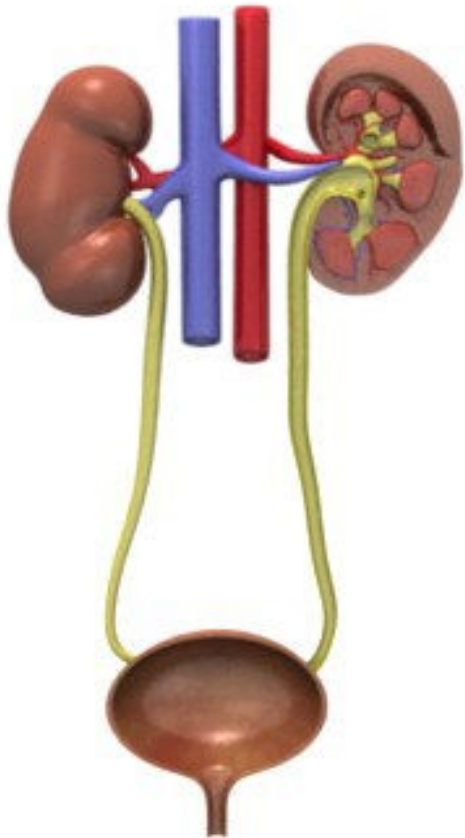


# MOČOVÝ SYSTÉM



- **Ren (ledvina)**
- **Vývodní cesty**
  - calyx renalis
  - pelvis renalis
  - ureter
  - vesica urinalis
  - urethra

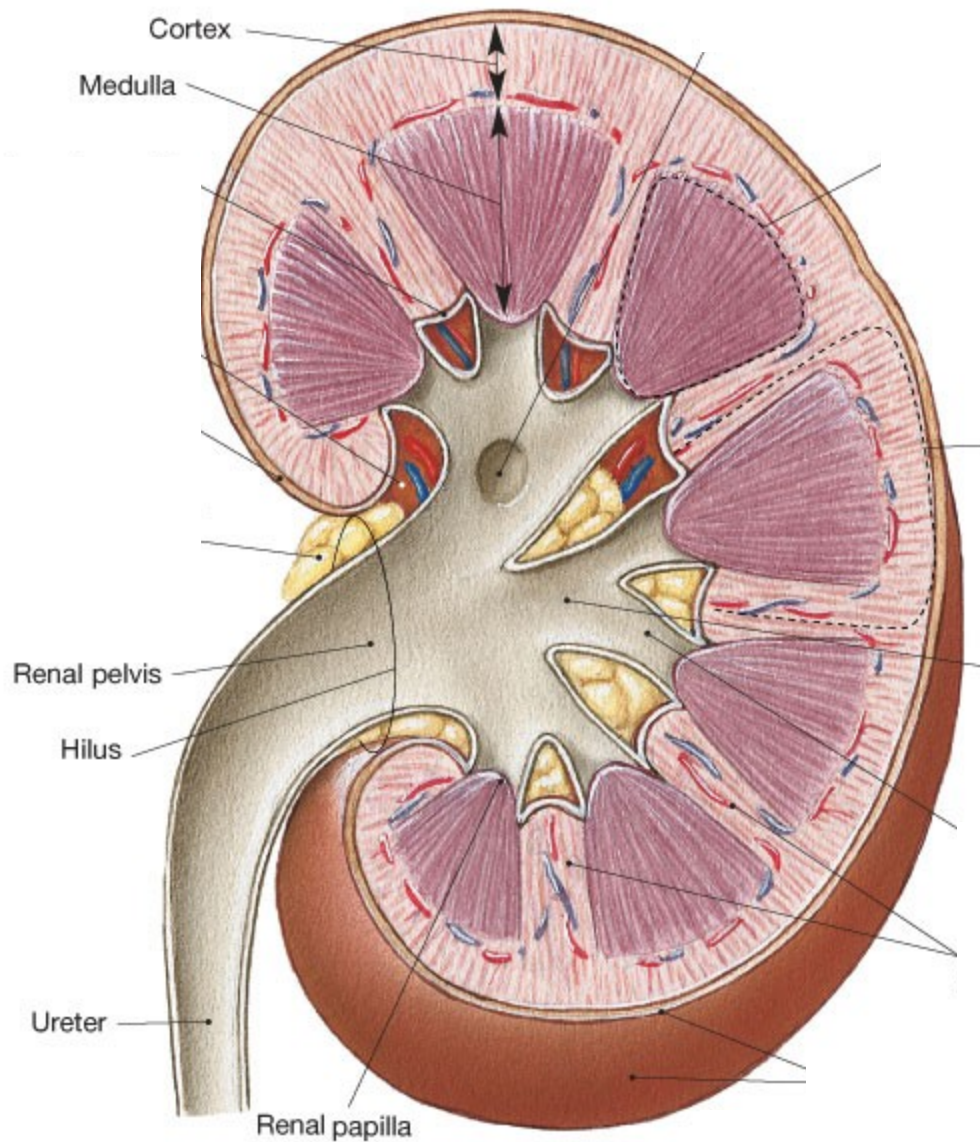
## Ledvina (ren, nephros)

### Cortex:

- cortex corticis
- pars radiata corticis
- columnae renales (Bertini)

### Medulla:

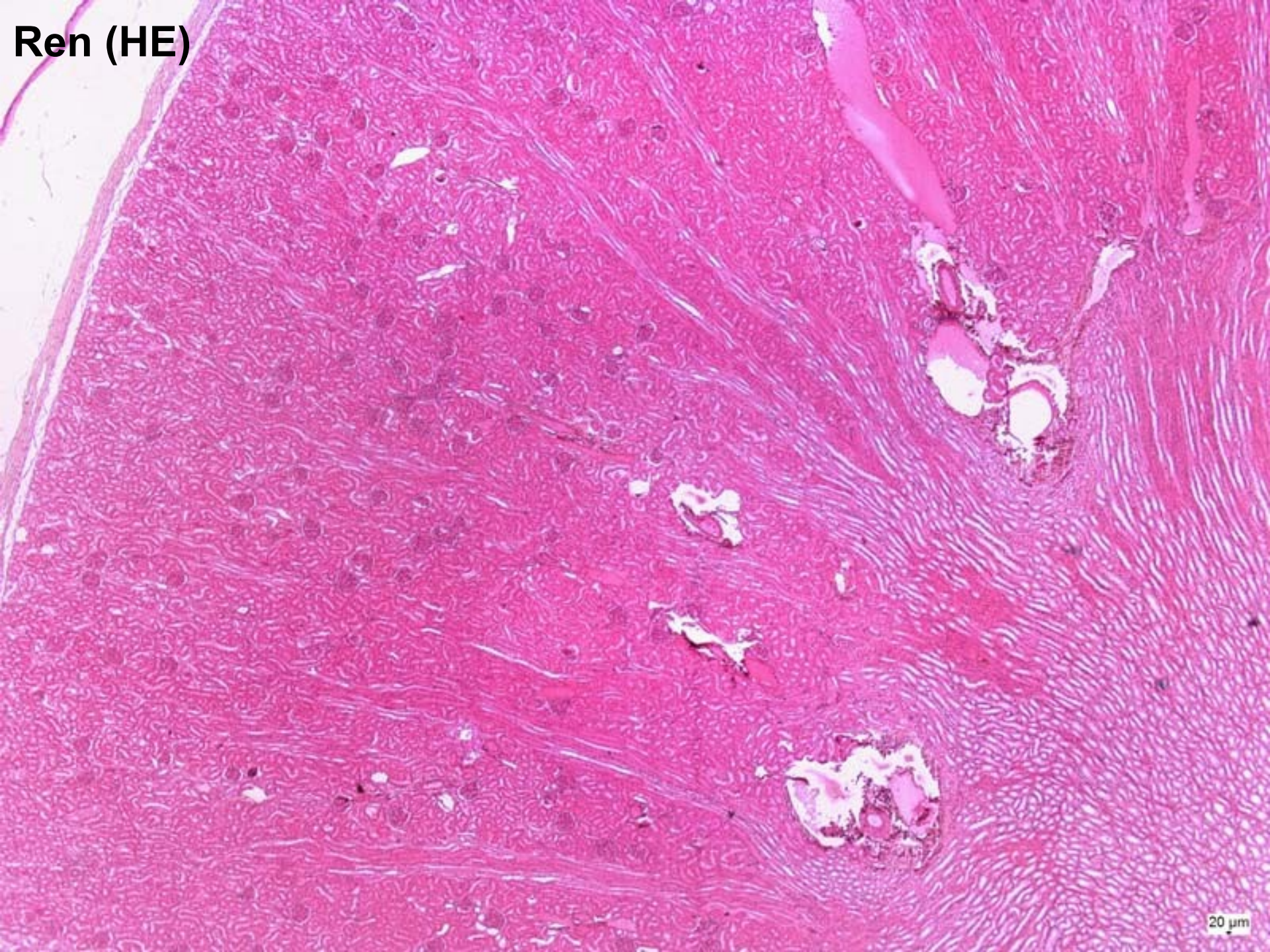
- pyramides renales (10 – 18)
- papillae renales
- foramina papillaria na area cribrosa



Capsula fibrosa  
Capsula adiposa

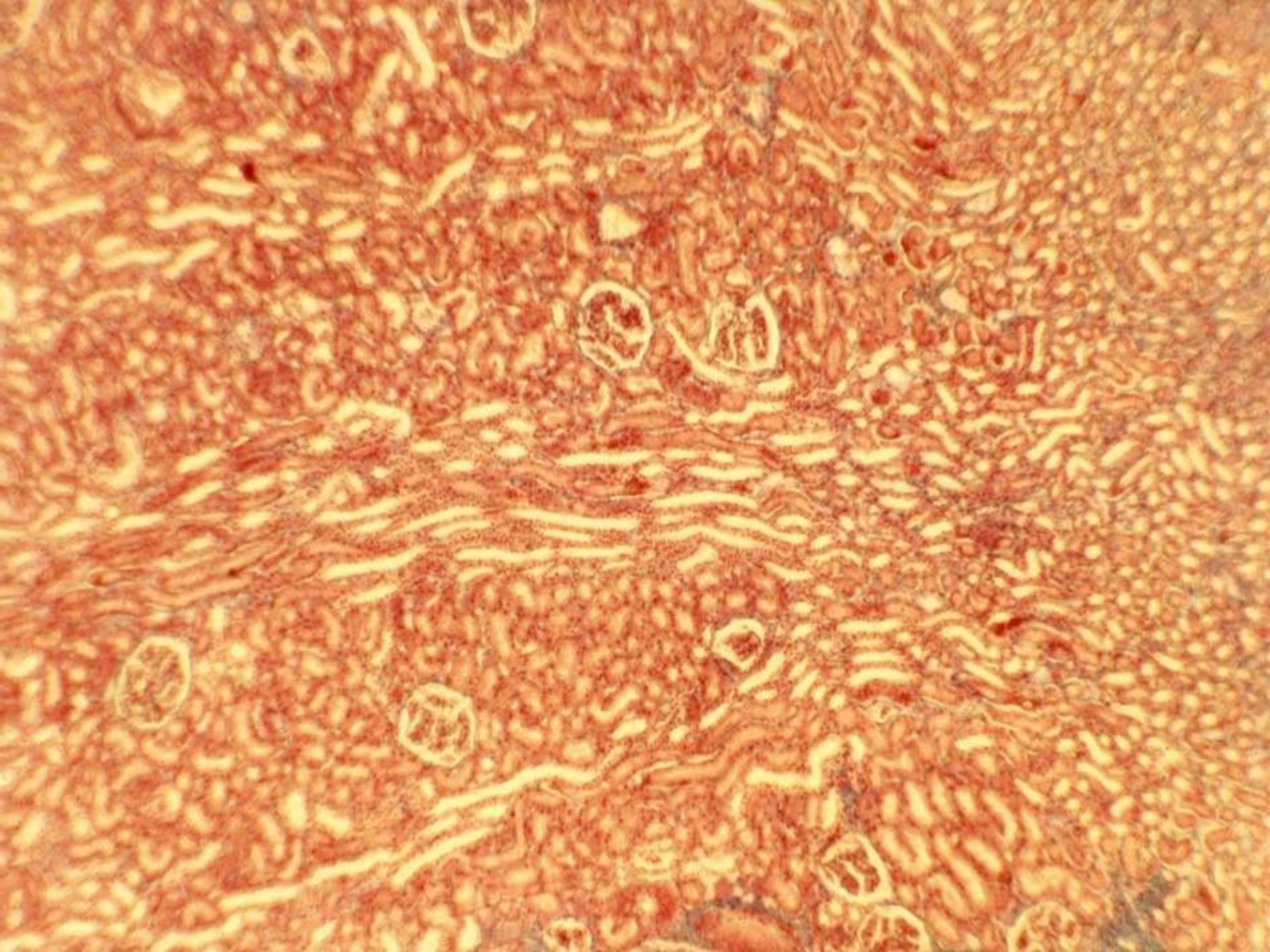


Ren (HE)



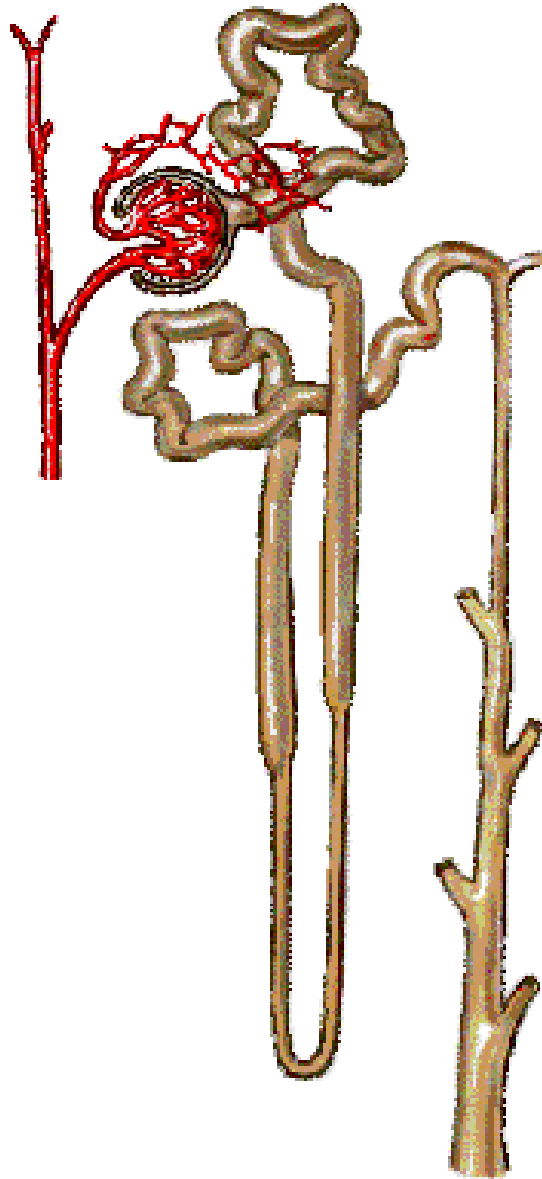
20  $\mu$ m





# NEFRON

Ledvinné tělísko  
corpusculum renis  
(Malpighi)



Glomerulus

Capsula glomeruli  
(Bowman)

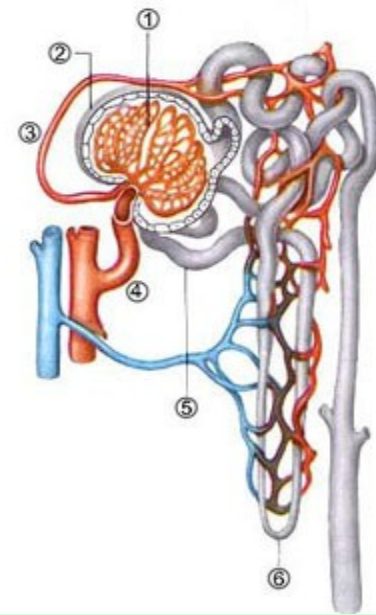
Ledvinný kanálek  
tubulus renis

Tubulus proximalis

Ansa nephroni (Henle)

Tubulus distalis

# Corpusculum renis ( $\varnothing$ 200 $\mu\text{m}$ )



arteriola afferens + efferens

Cévní pól

Bowmanovo pouzdro:

parietální list

viscerální list (podocyty)

močový prostor

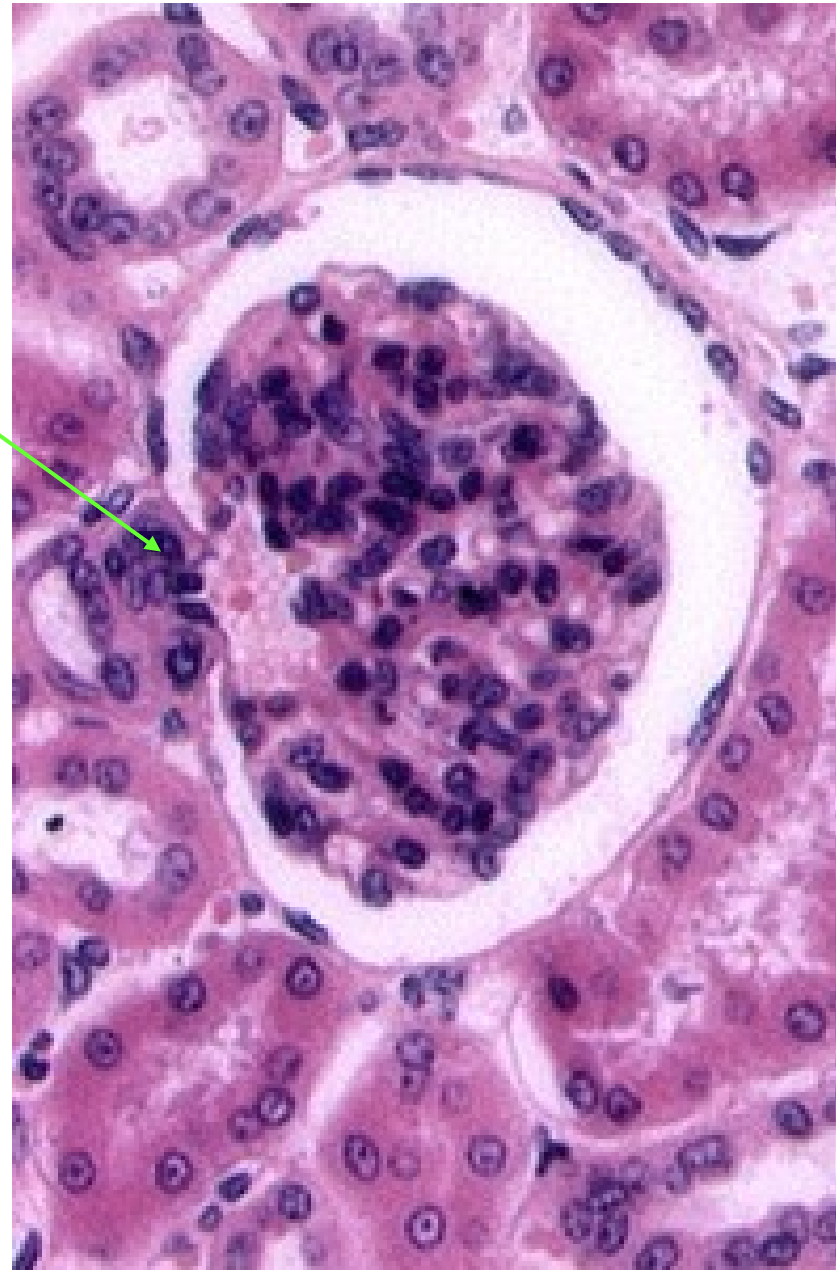
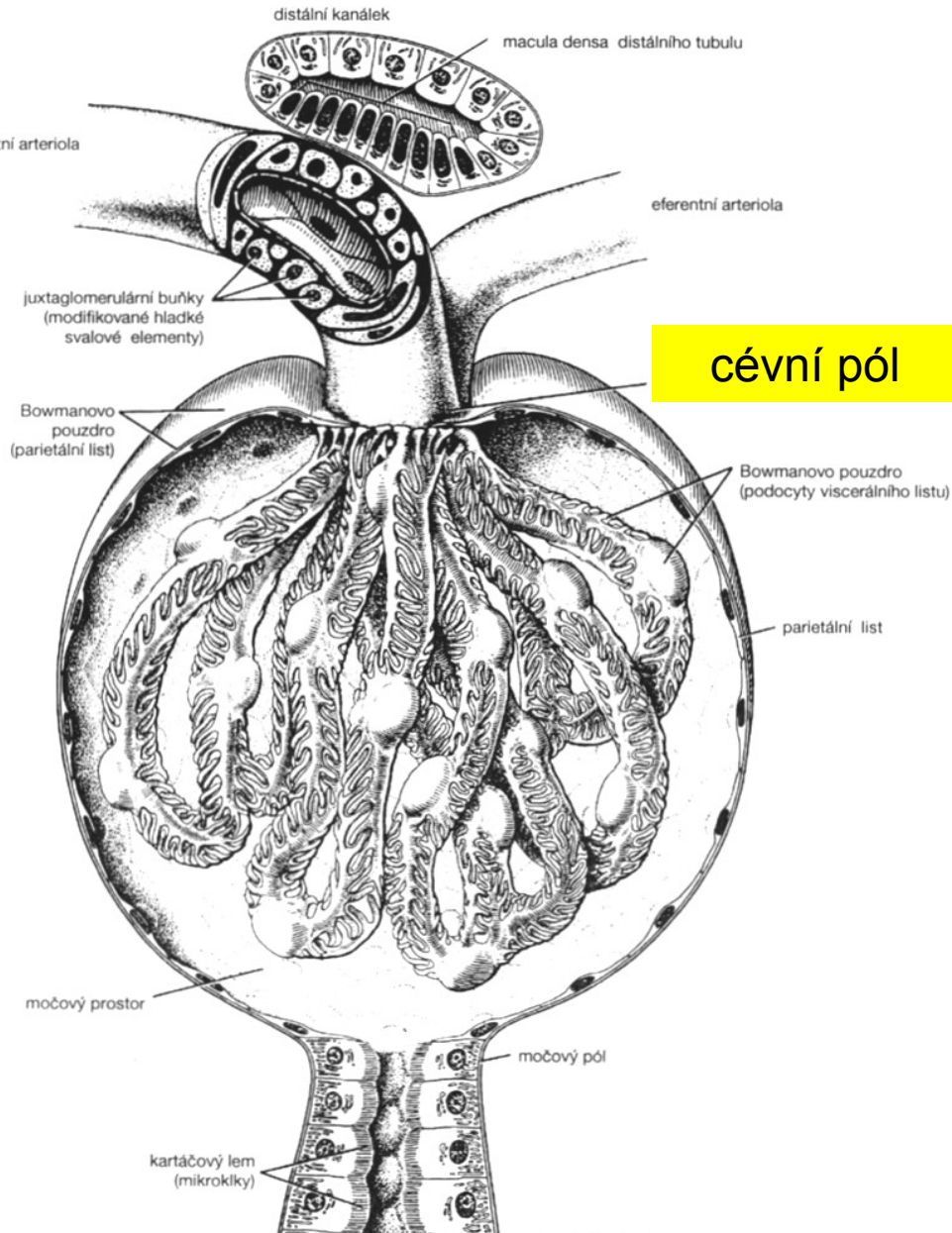
močový pól

glomerulus

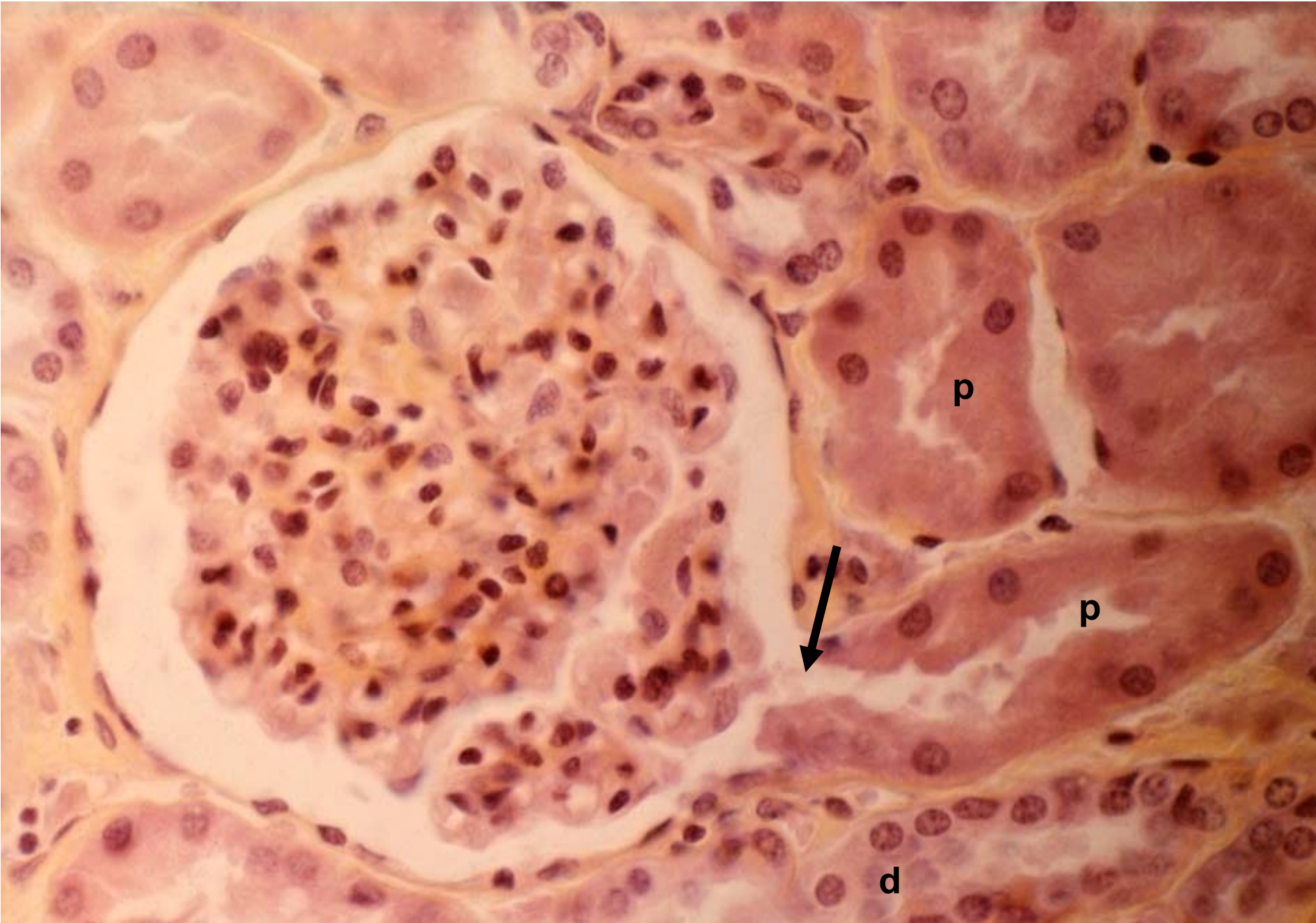
= klubičko kapilár s póry



# Corpusculum renis

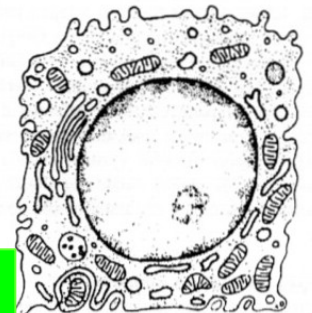
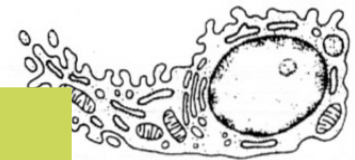
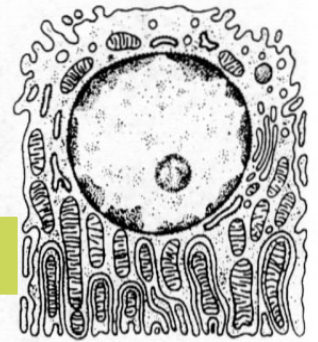
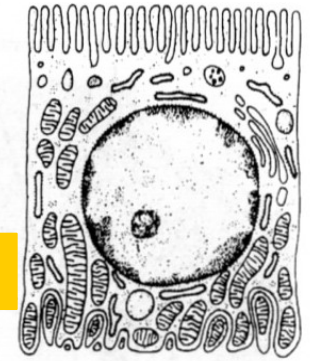
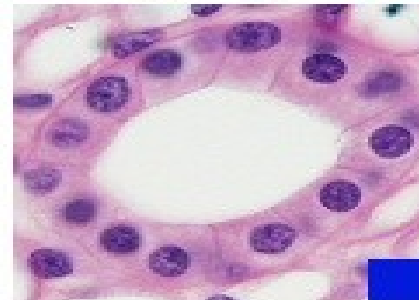
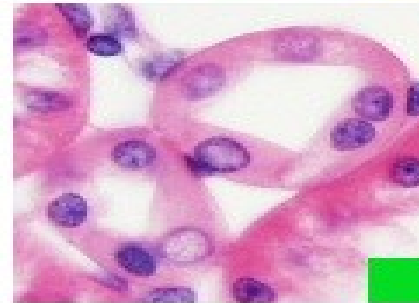
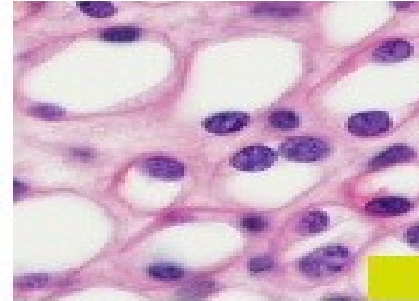
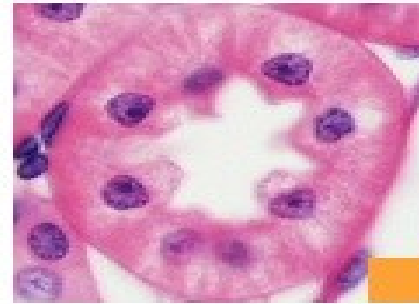
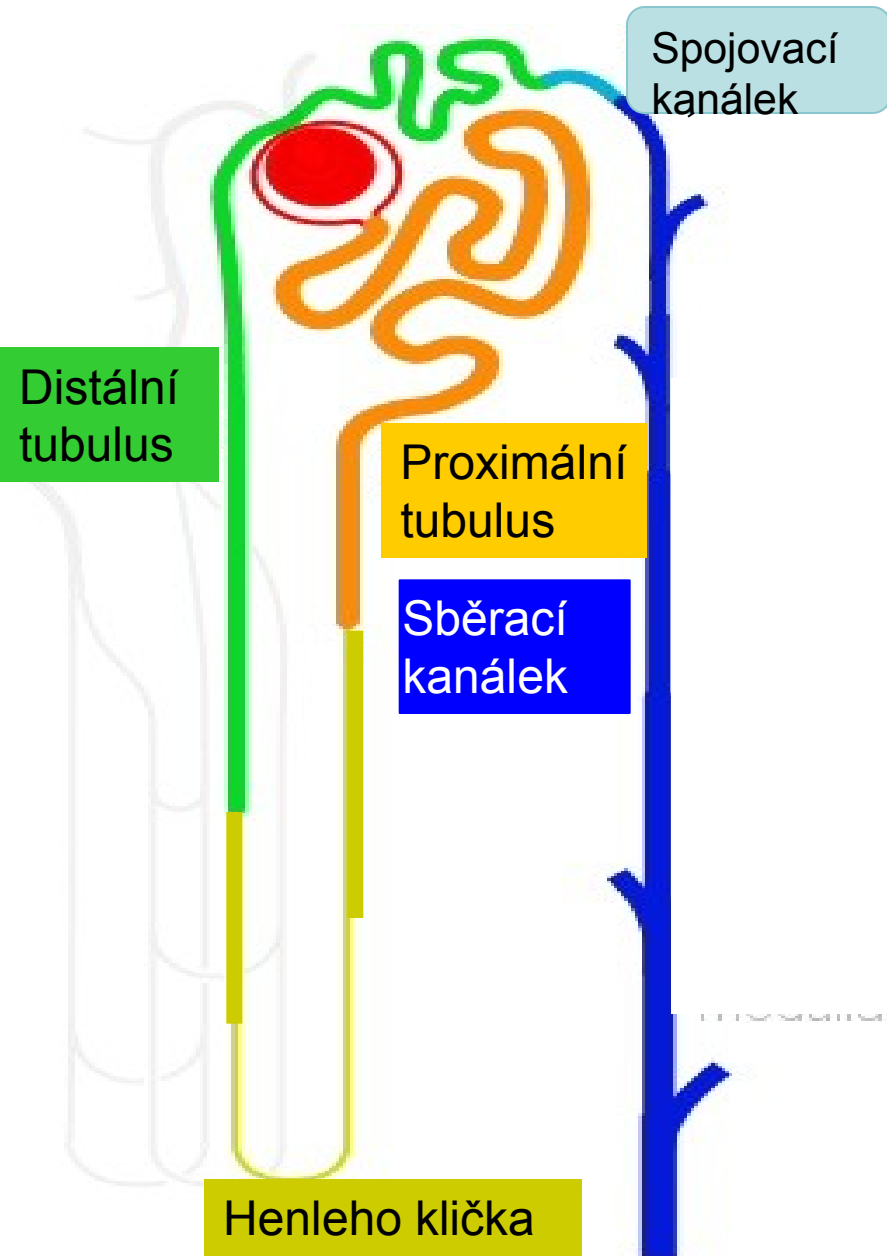


Ren (HE) – corpusculum renis, **močový pól** ↓

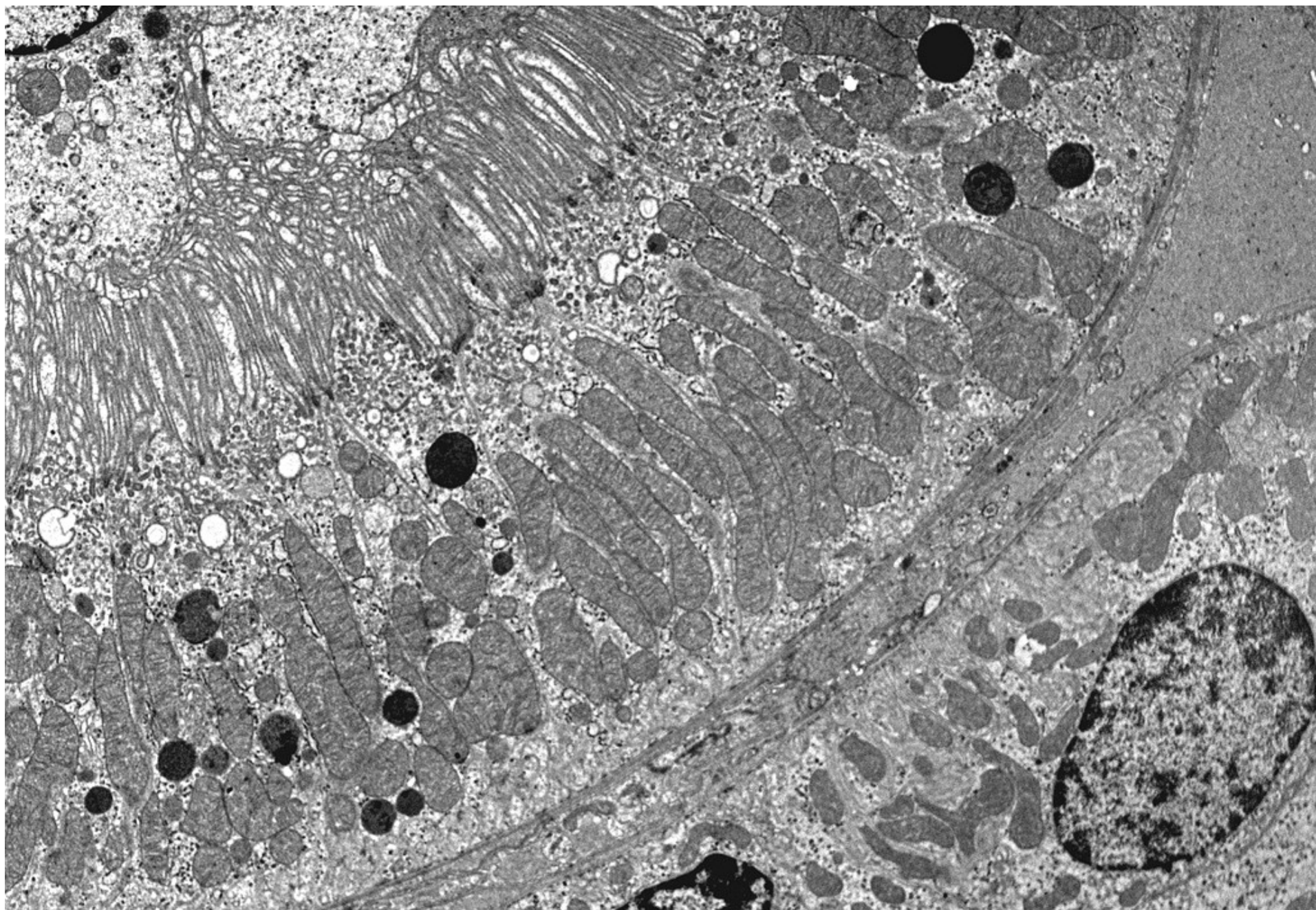




# Tubulus renis + sběrací kanálek

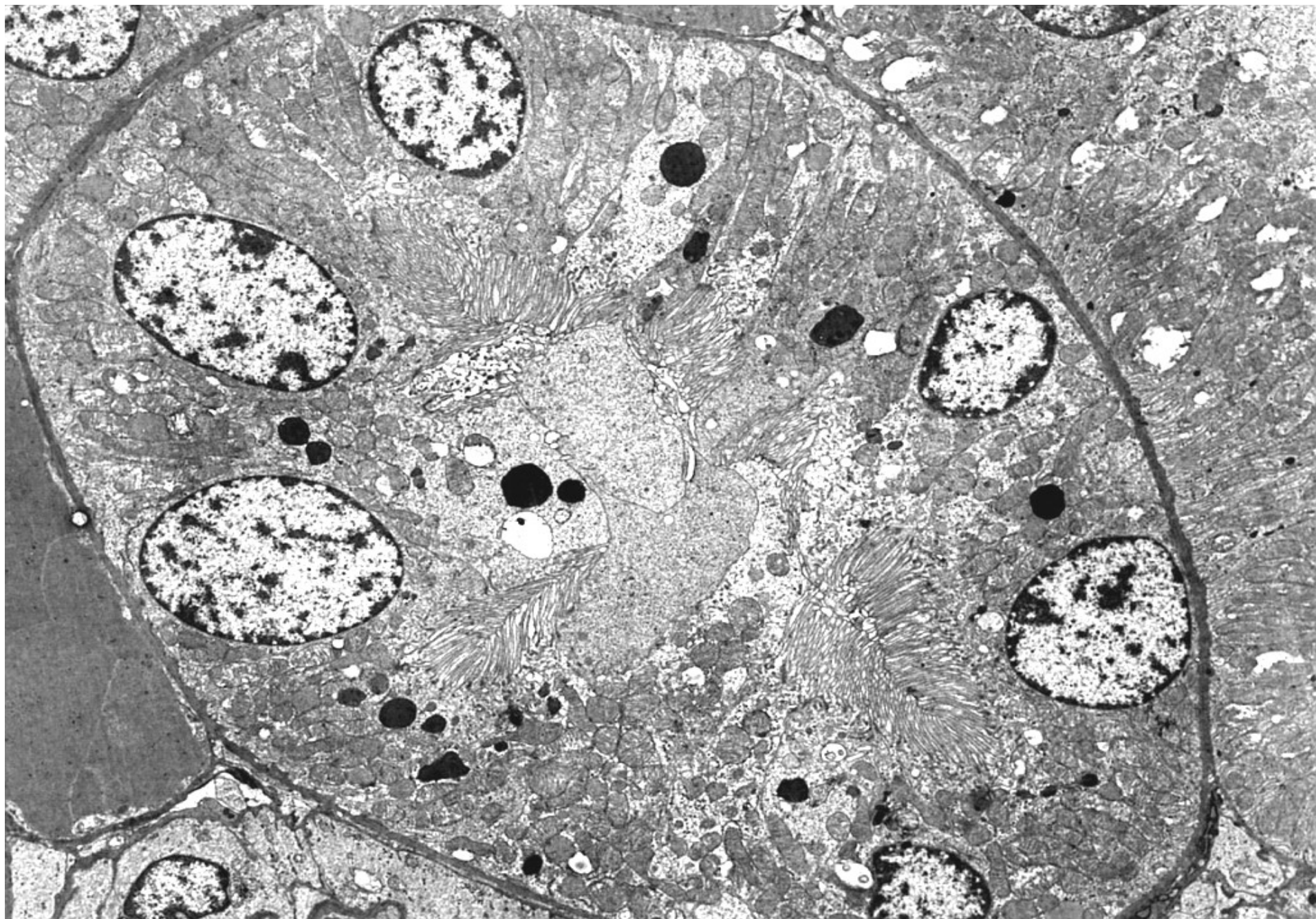


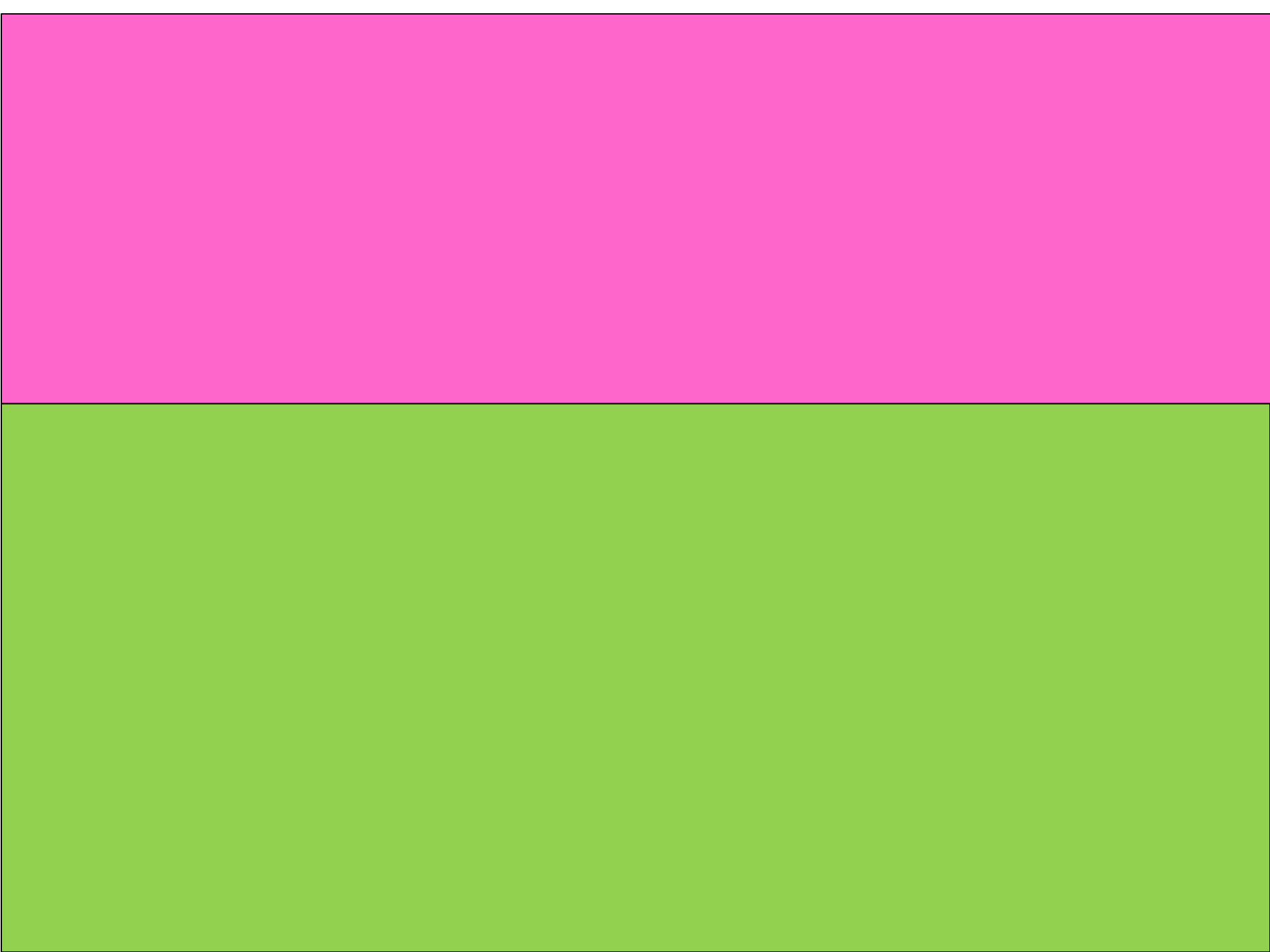
Ren – proximální tubulus (ELM): kartáčový lem, bazální labyrint





Ren – proximální tubulus (ELM): kartáčový lem, bazální labyrint





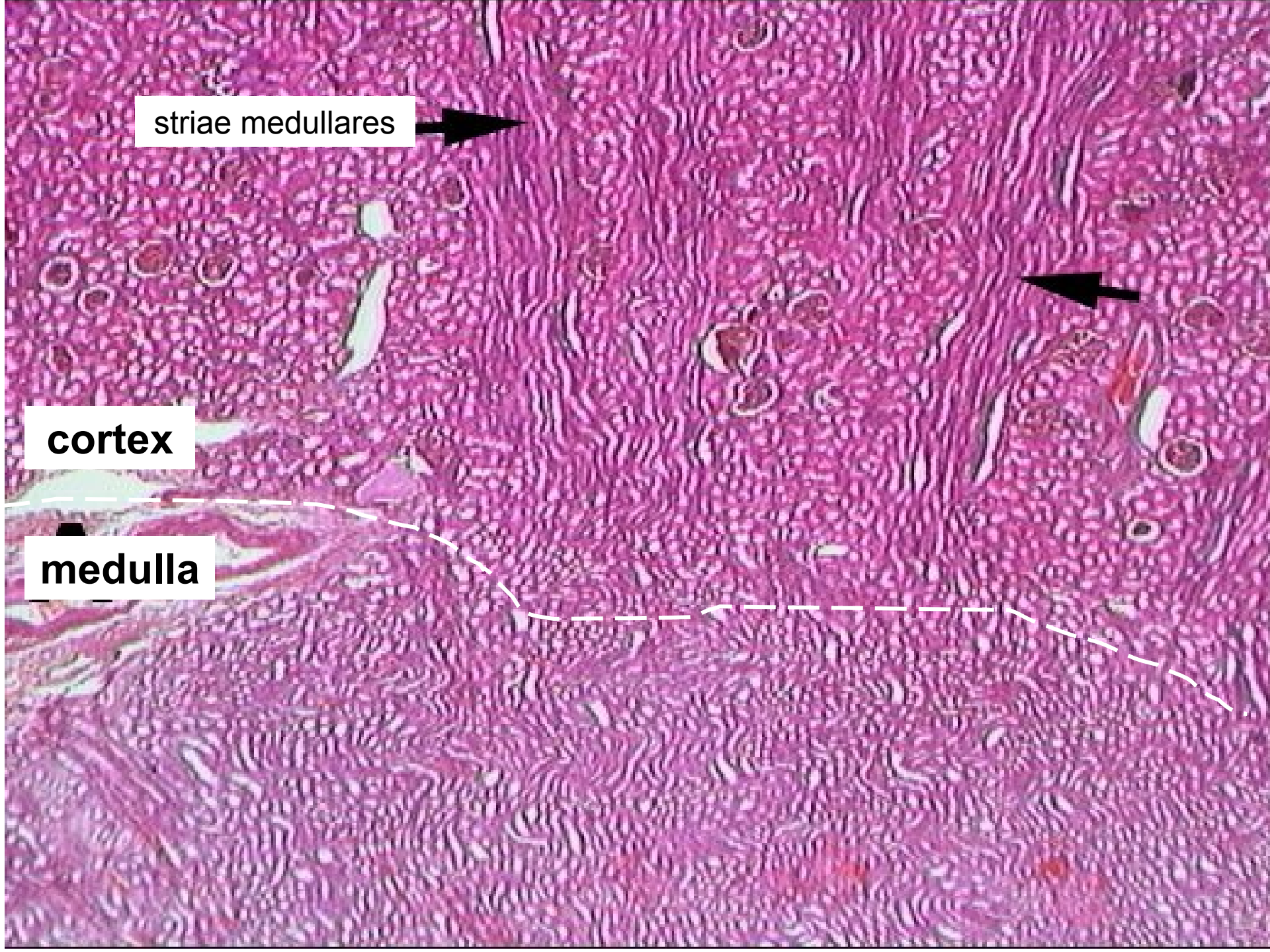


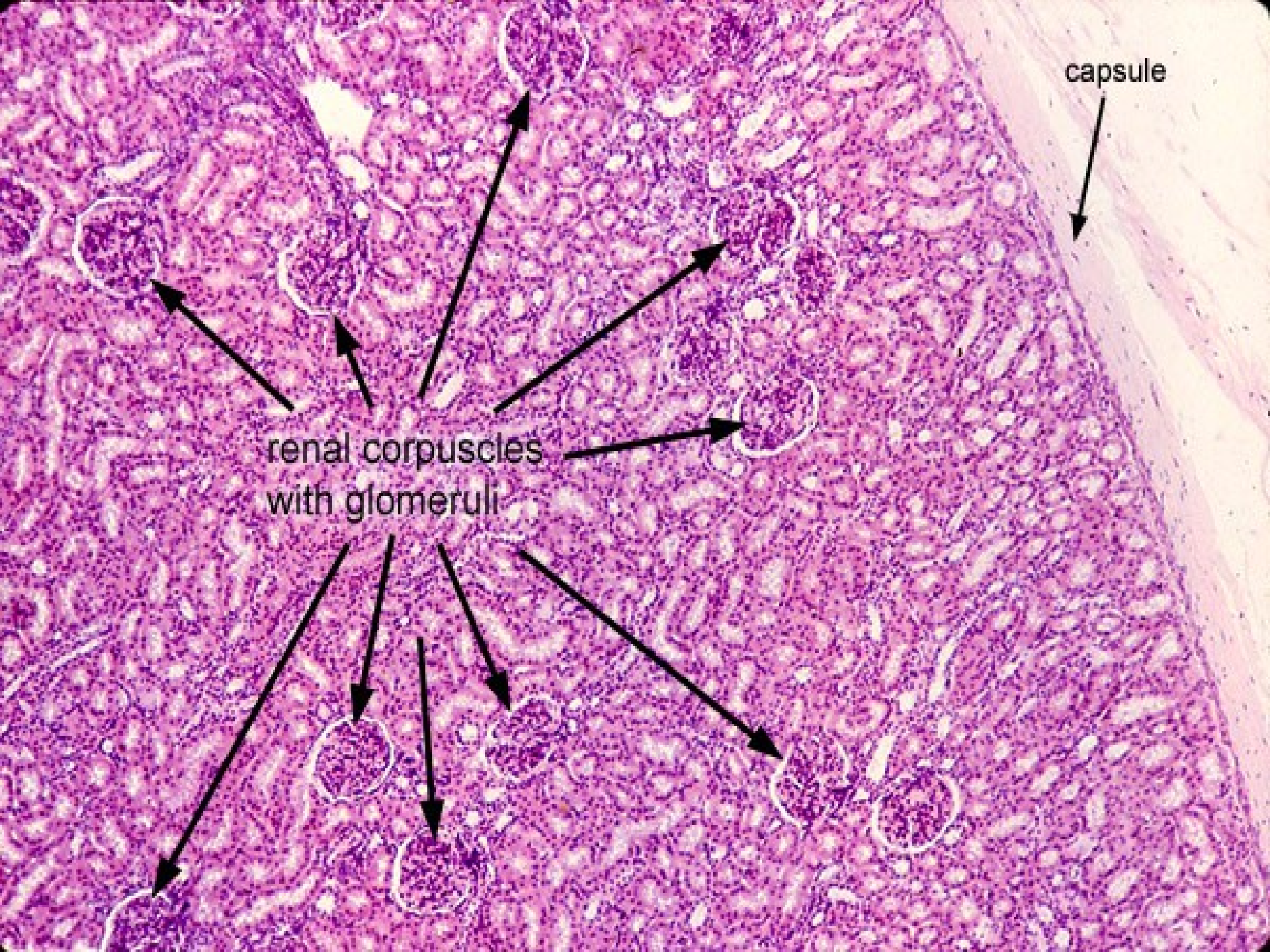
striae medullares



cortex

medulla

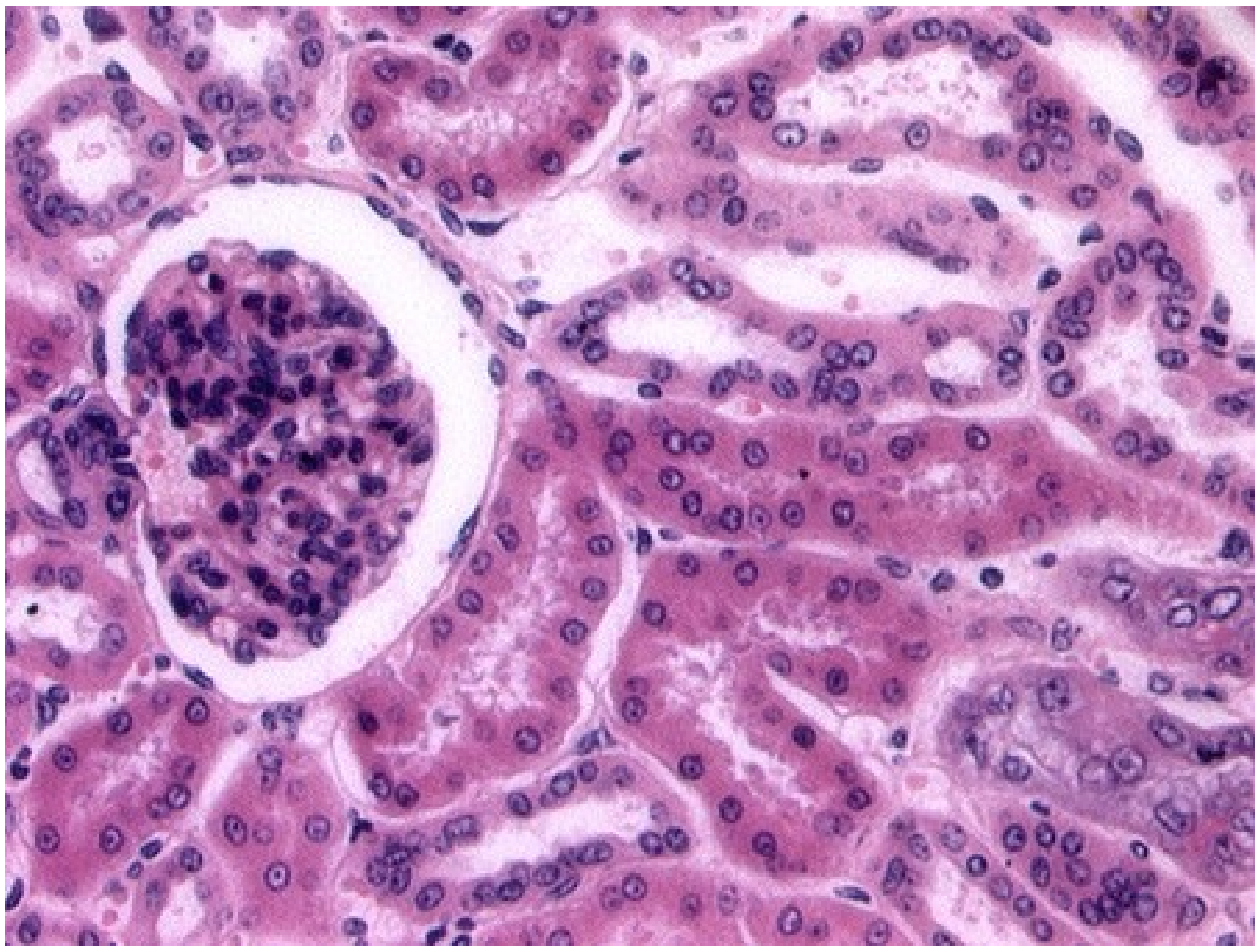




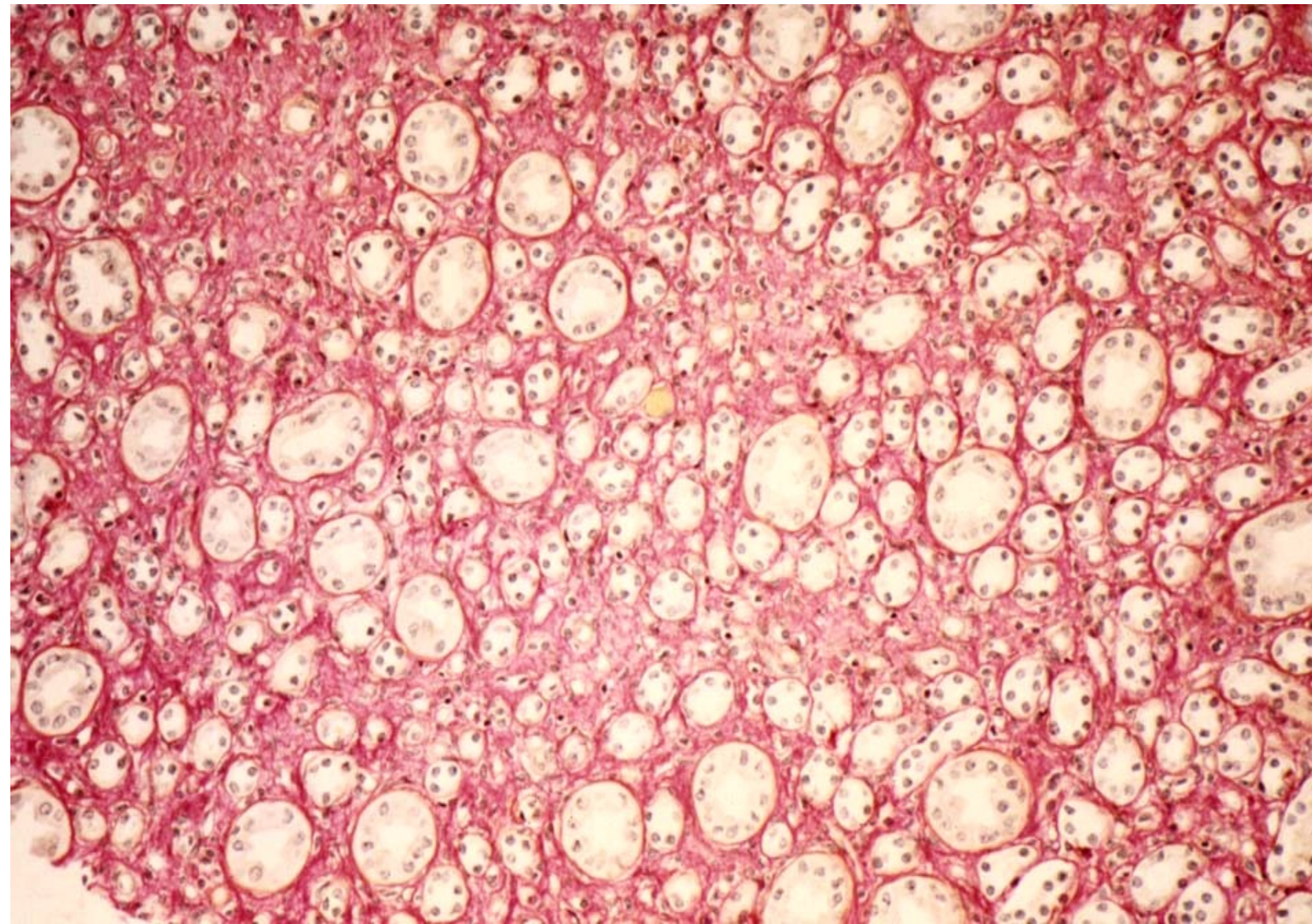
capsule

renal corpuscles  
with glomeruli



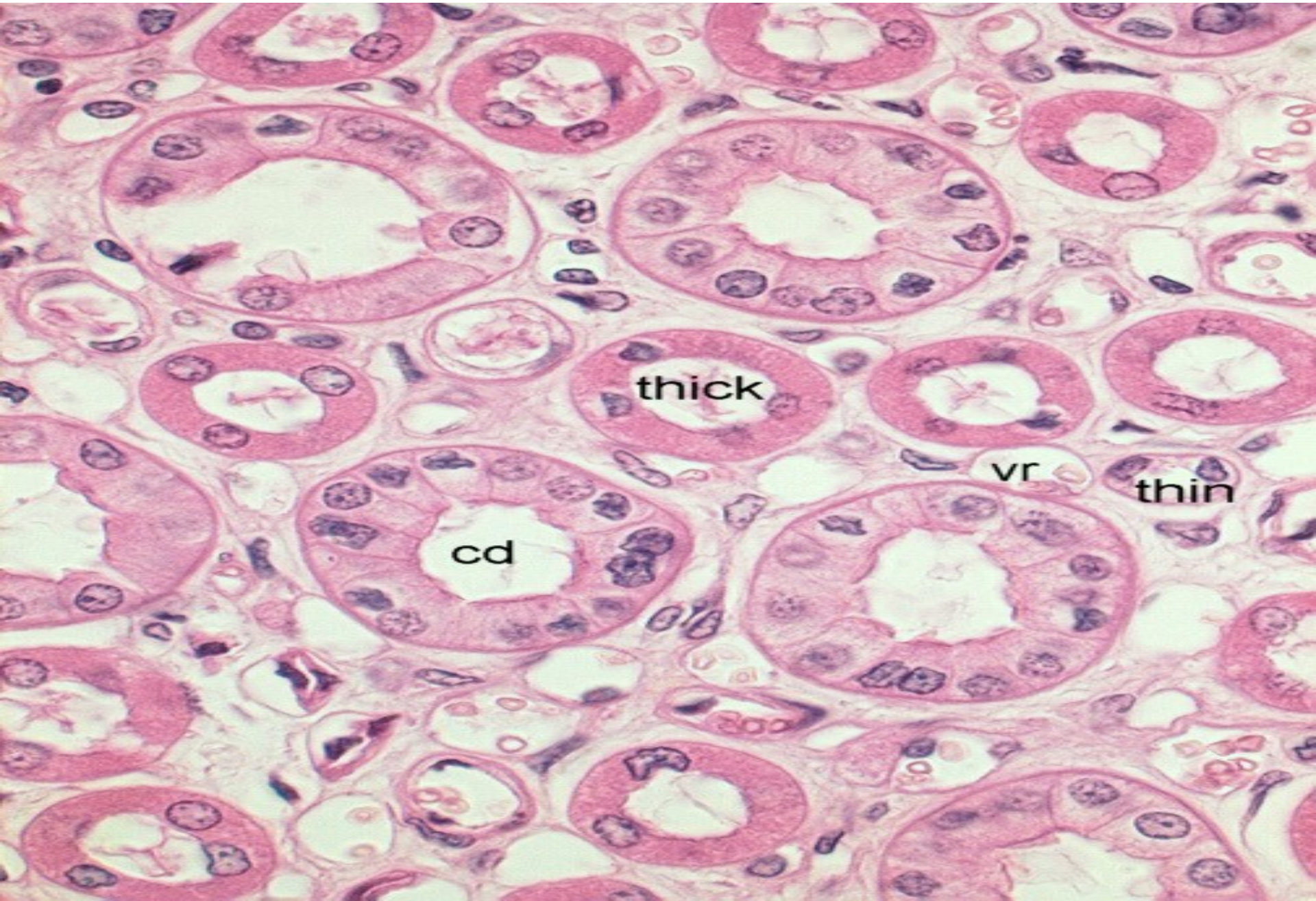


Ren (Weigert-van Gieson) - medulla





# Ren – medulla (HE)

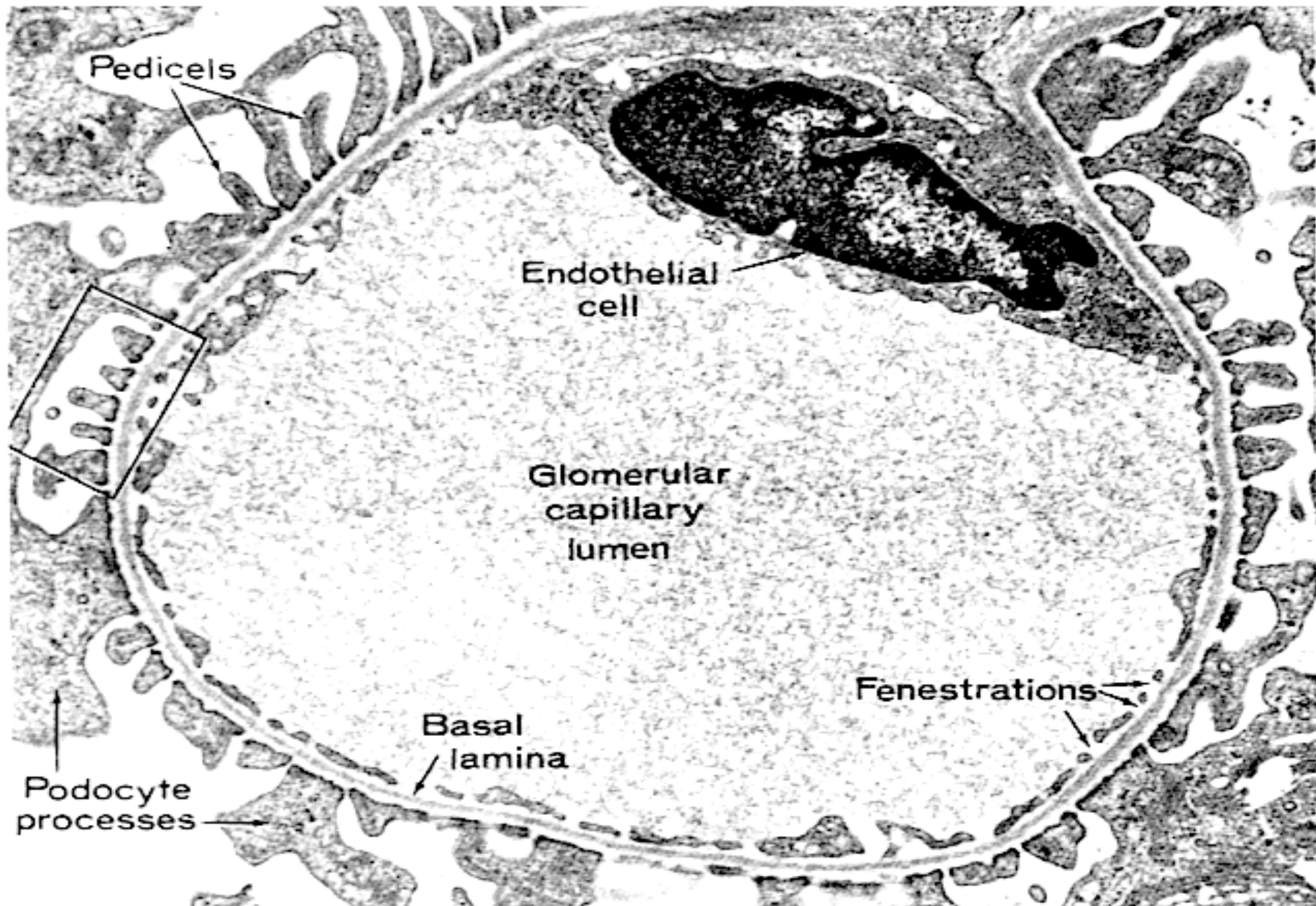


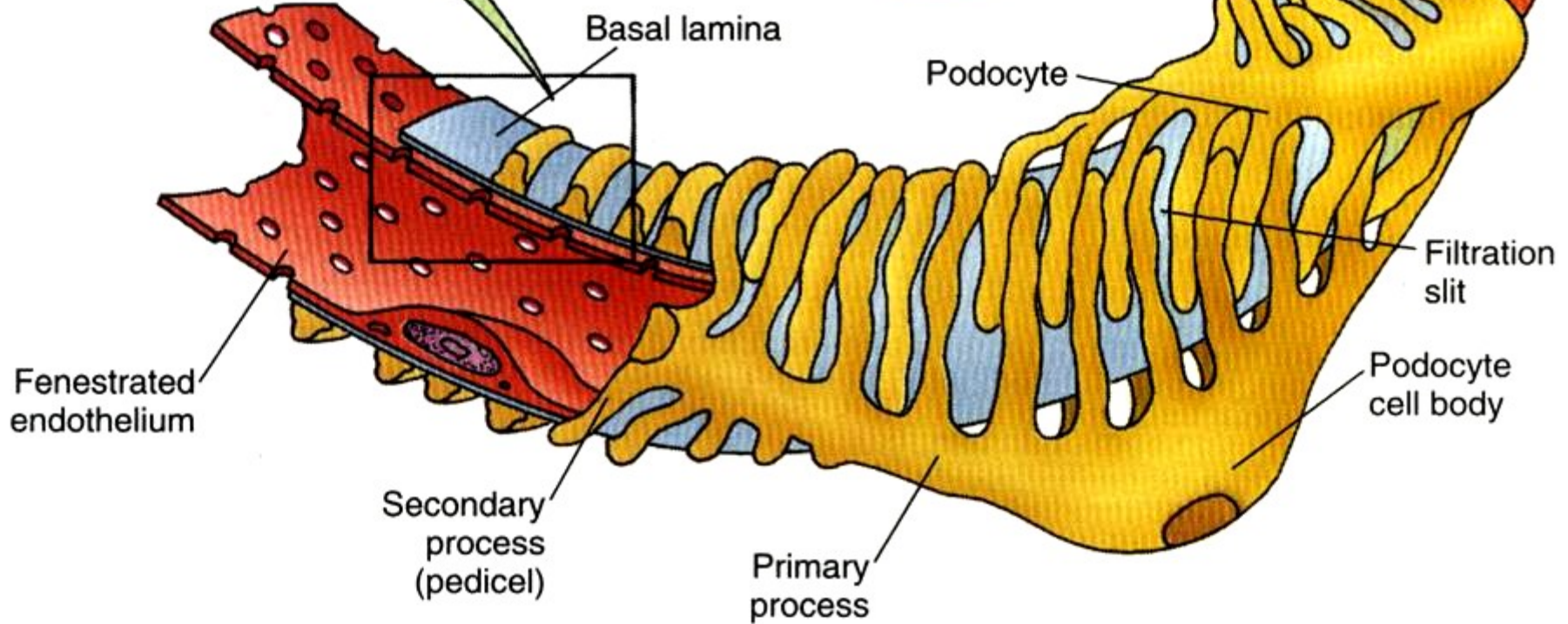
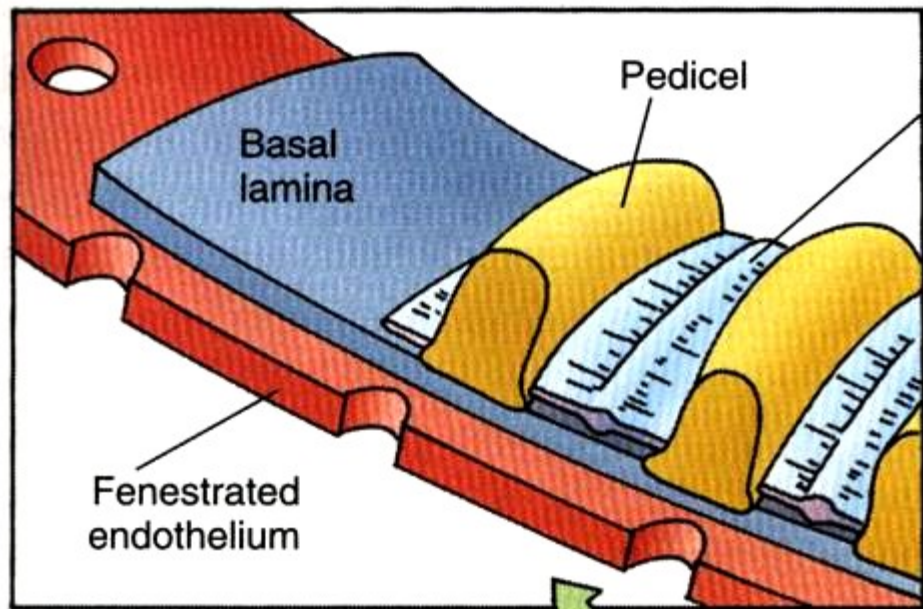


# Filtrační membrána

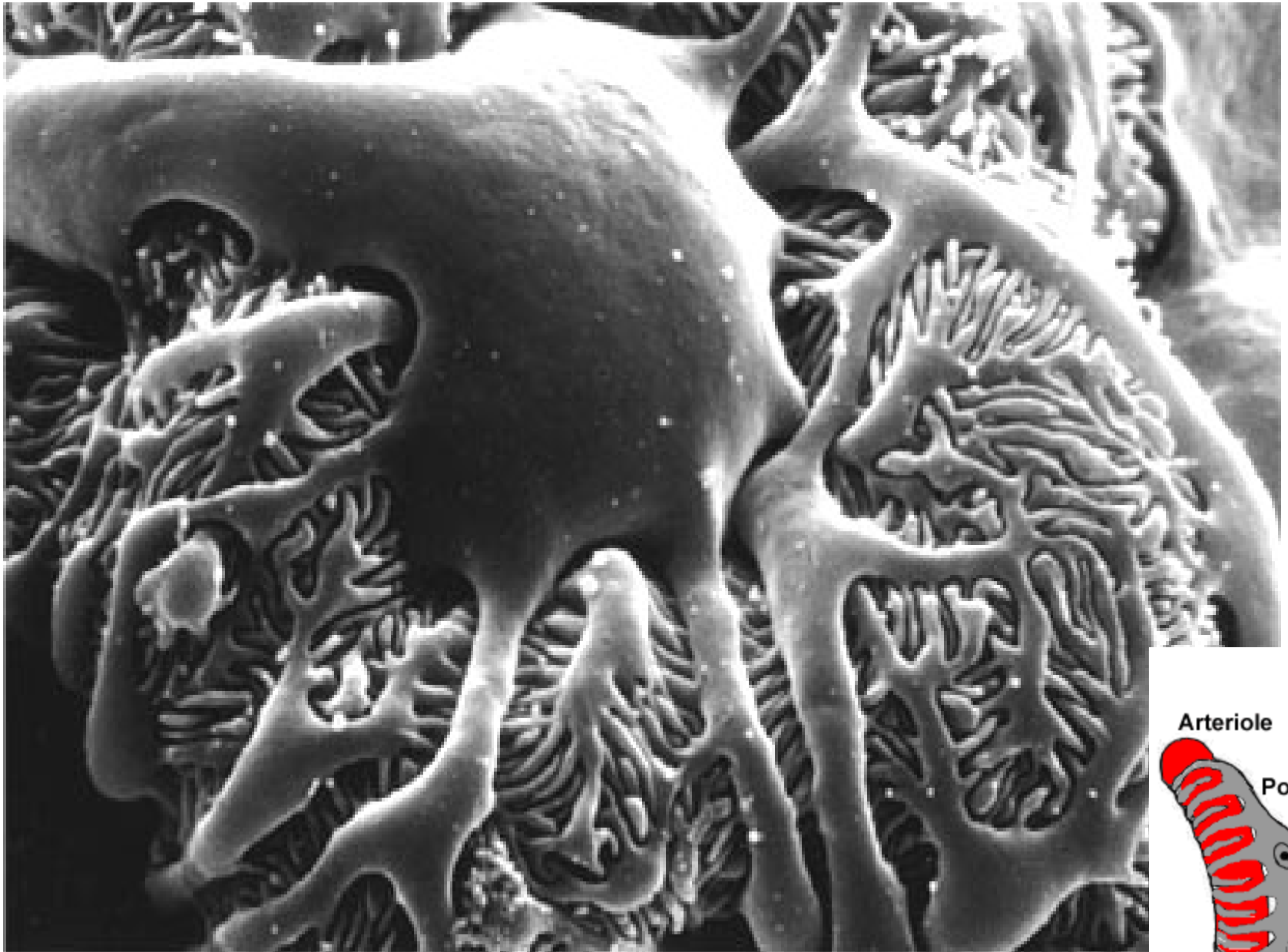
- endotelové buňky – fenestrace (póry)
- **splynulé laminae basales** endotelu a podocytů: [*l. densa: kolagen IV (fyzikální filtr), l. rarae: heparansulfát (iontový filtr)*]
- podocyty – **diafragma** přepažující štěrbinu mezi pedikly

# Filtrační bariéra









Arteriole

Podocyte



# Vývodní močové cesty

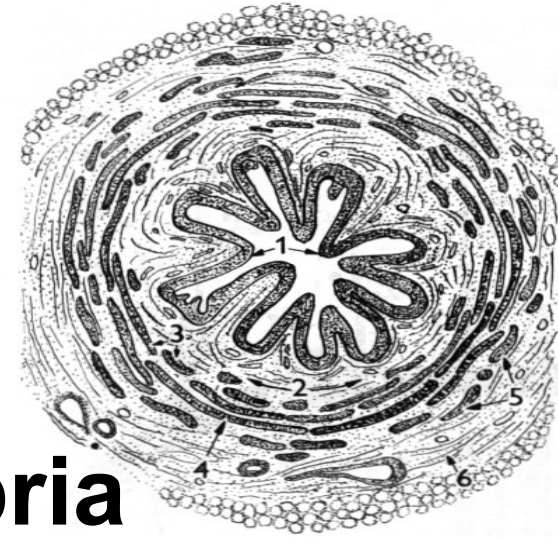
- **intrarenální:**

- tubuli colligentes
  - ductus colligentes
  - ductus papillares

- **extrarenální:**

- calyces minores
  - calyces majores
  - pelvis renalis
  - ureter
  - vesica urinalis
  - urethra (feminina, masculina)

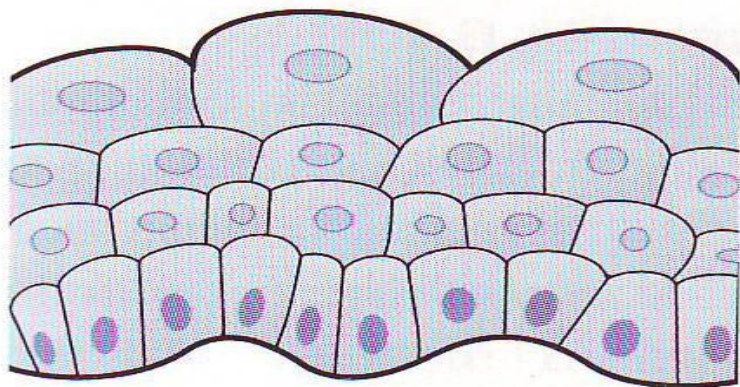
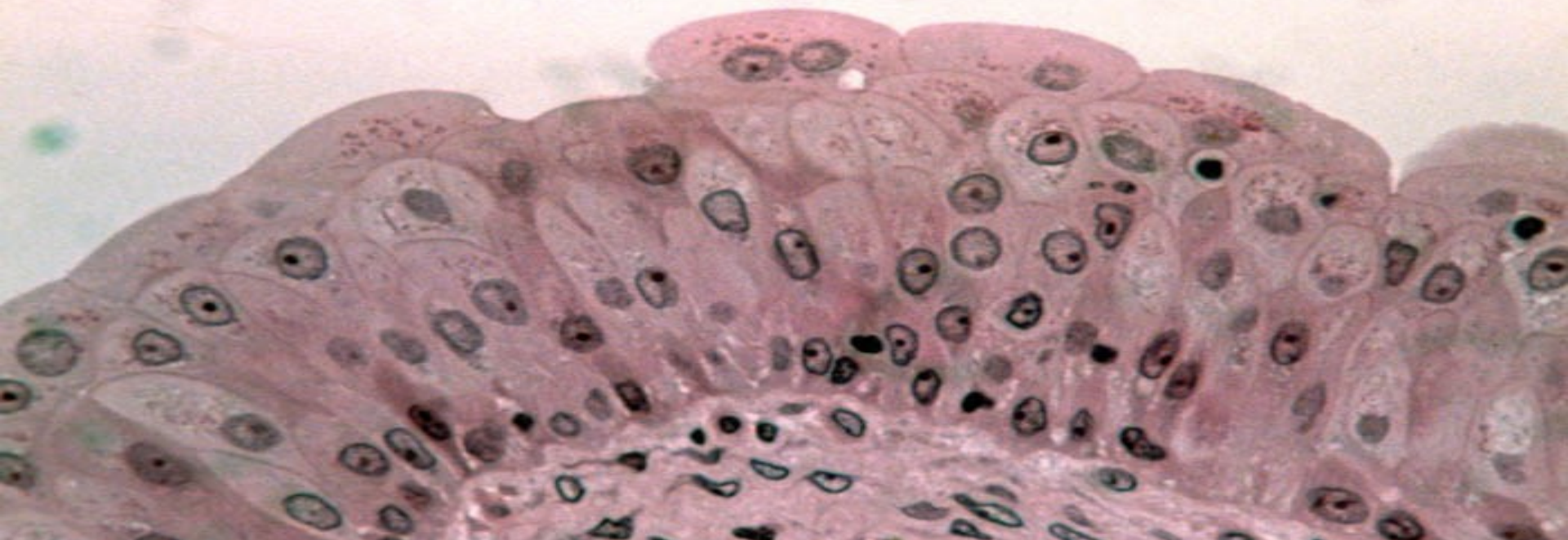
# Extrarenální vývodní cesty



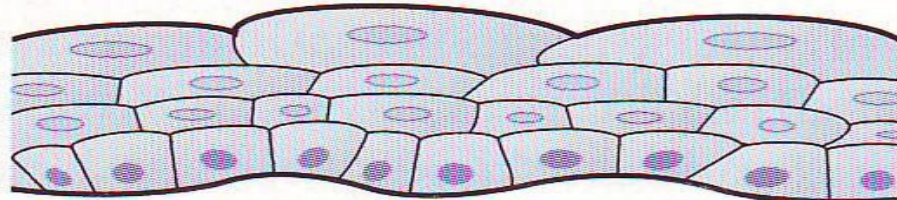
- **sliznice:** epitel, lamina propria mucosae
- **tunica muscularis:** hladká svalová tkáň uspořádaná do 2 (nebo 3 – dolní 1/3 ureteru, močový měchýř) vrstev
- **adventicie** (močový měchýř – částečně seróza)



## Přechodný epitel



A - prázdný orgán

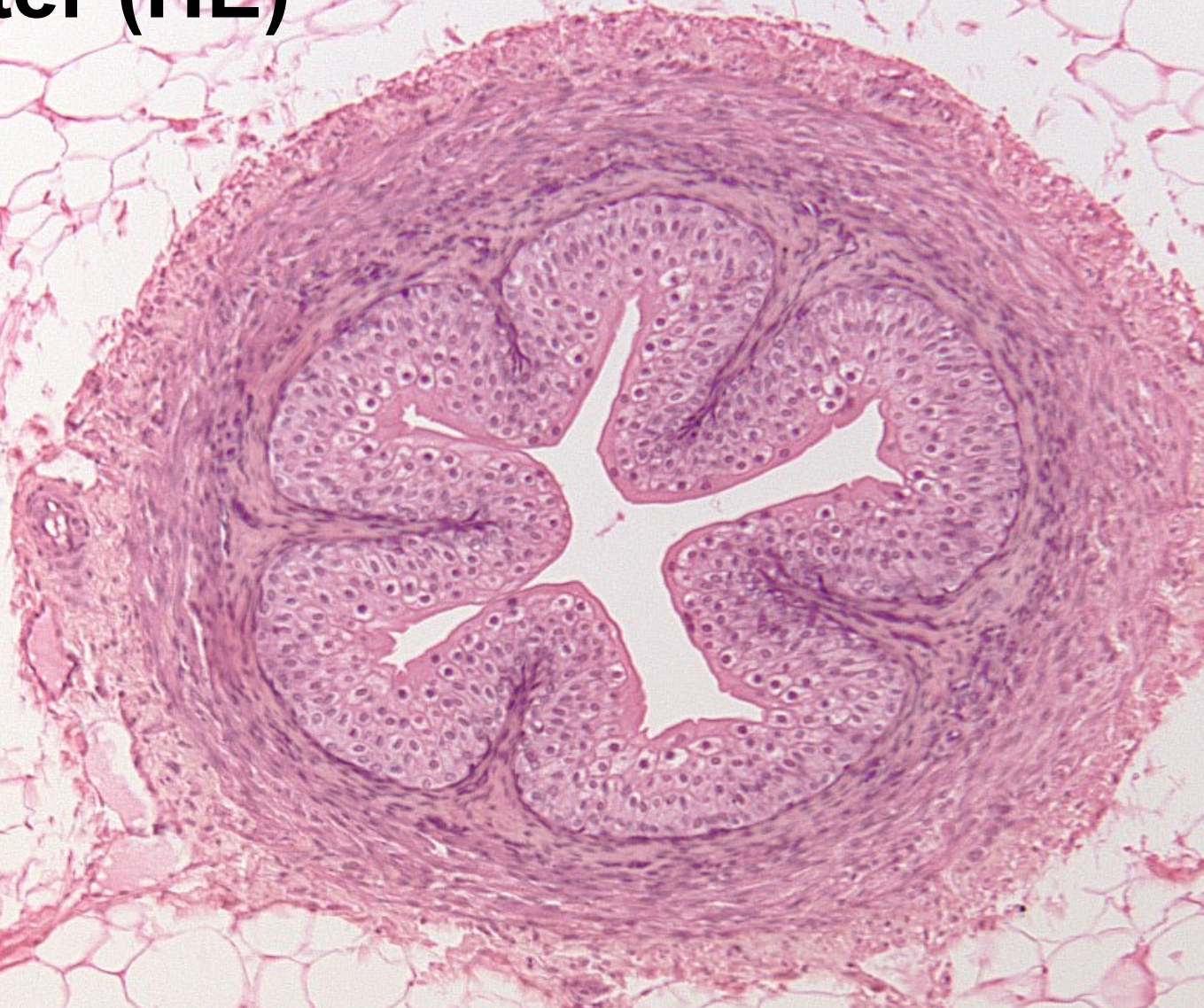


B - plný orgán

Přechodní epitel (calyces et pelvis renalis, ureter, vesica urinalis, pars muralis urethrae)

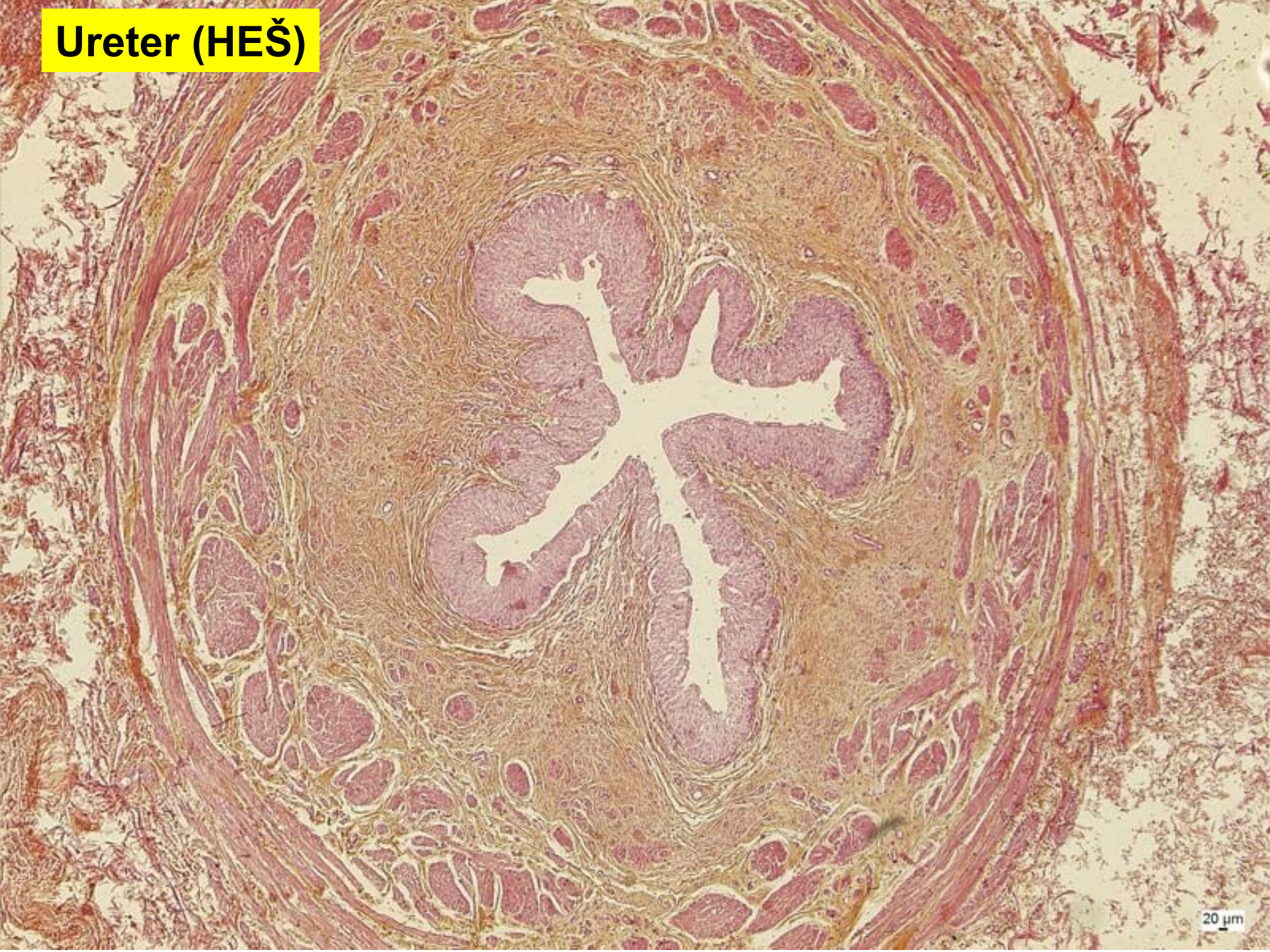


# Ureter (HE)





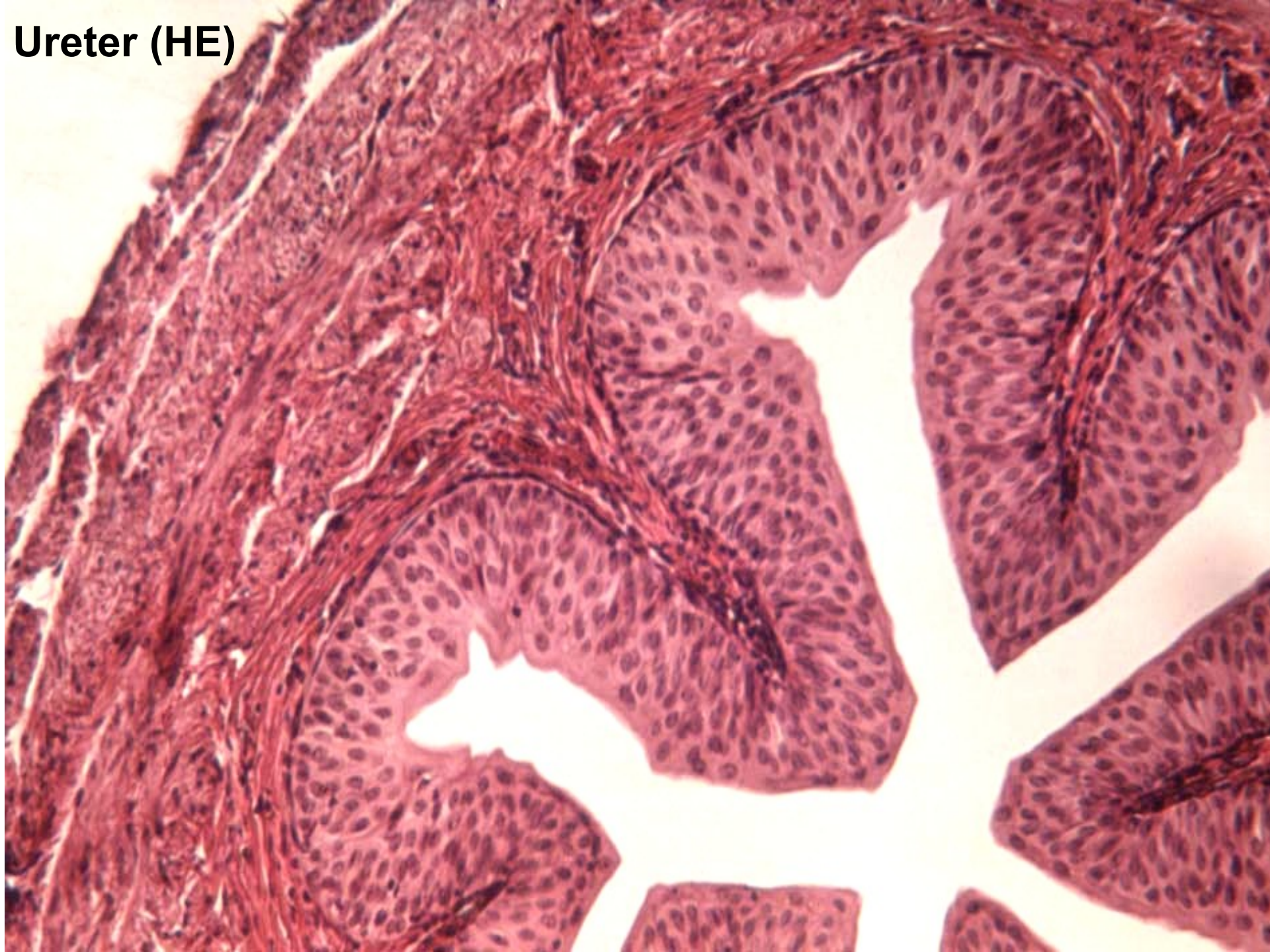
**Ureter (HEŠ)**



20 μm



**Ureter (HE)**



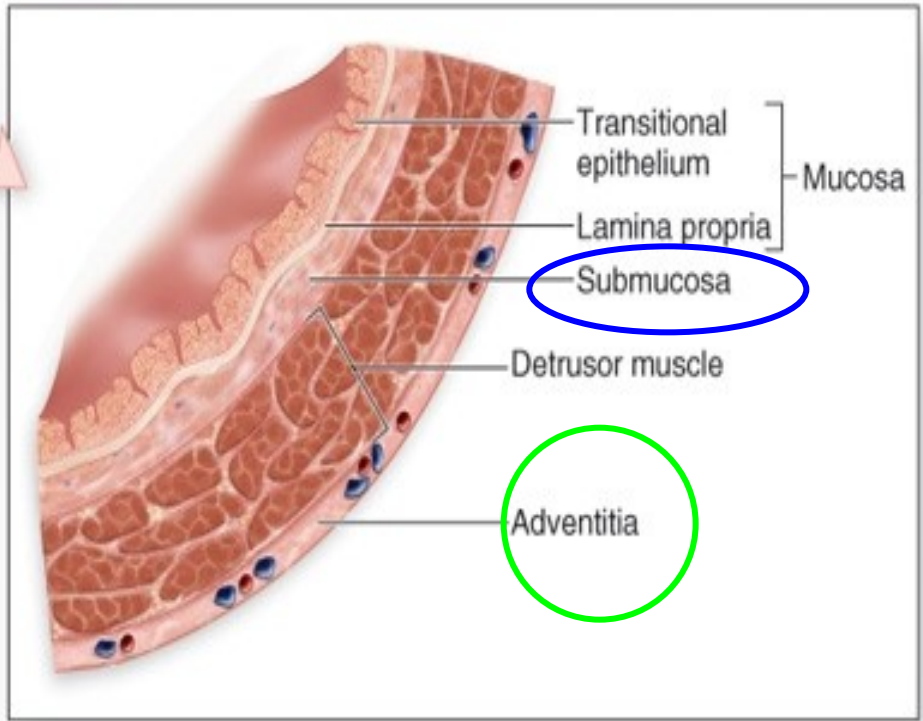
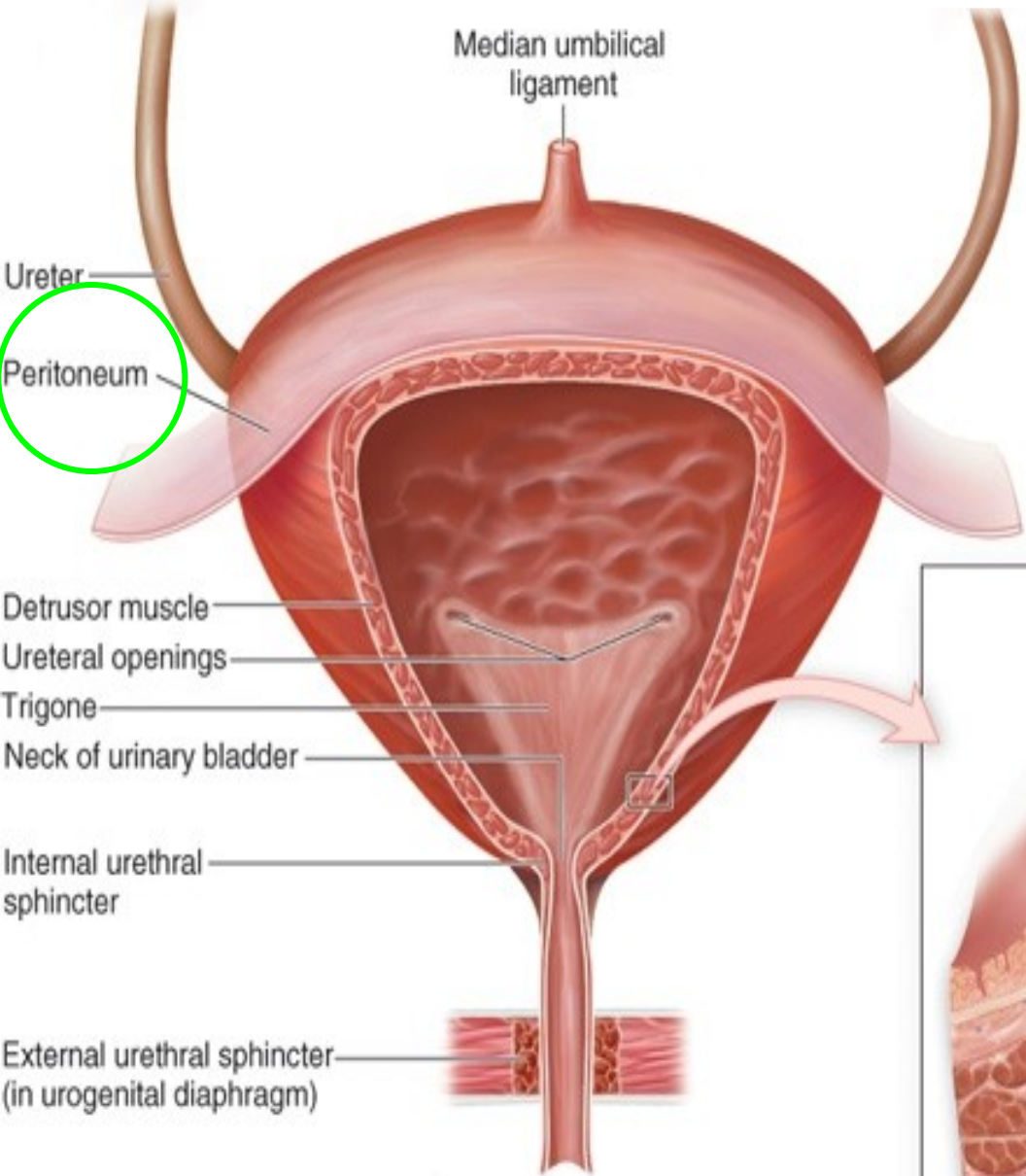


# Vesica urinalis

+ submucosa

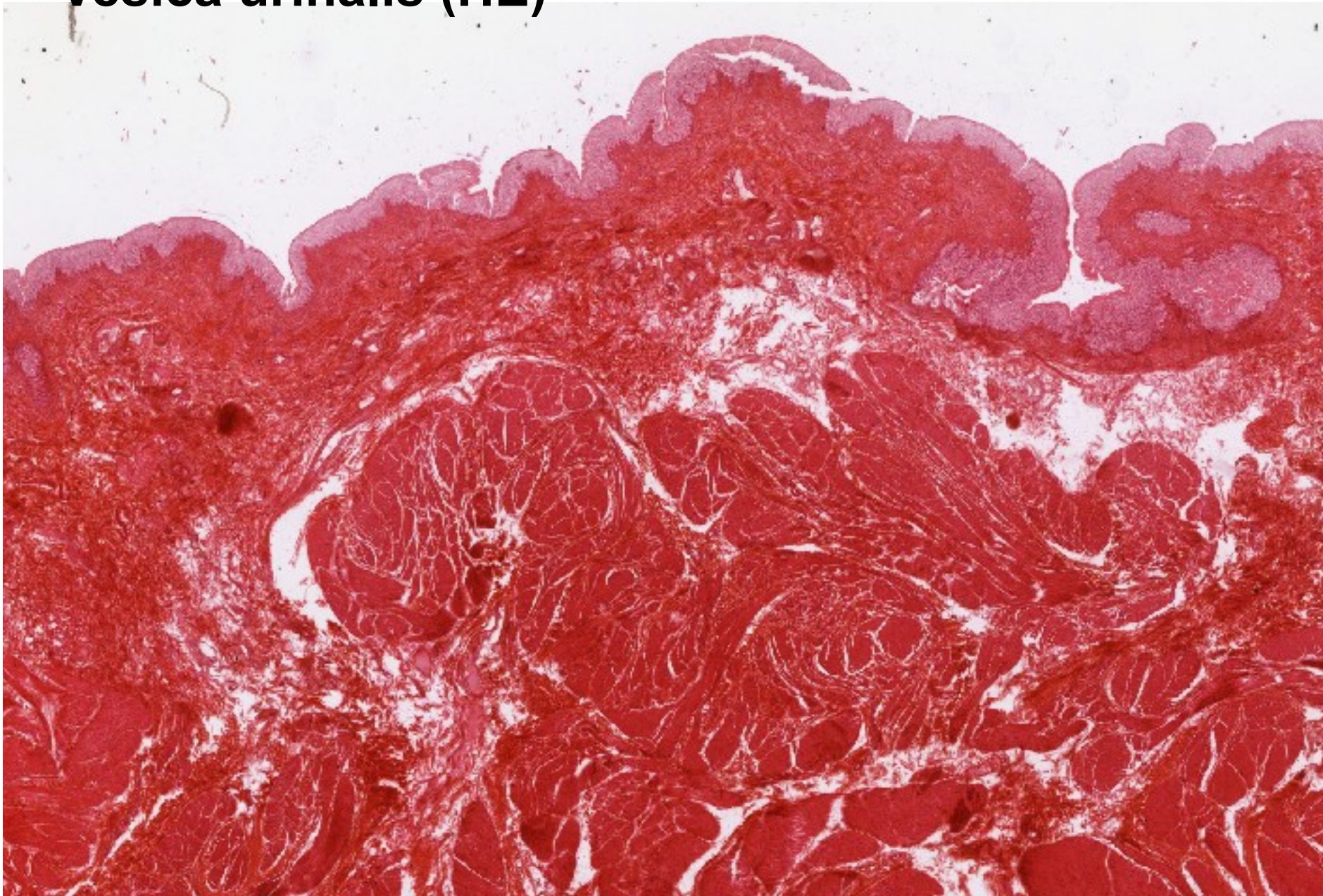
3 vrstevná tunica muscularis ext.

adventicie x seróza





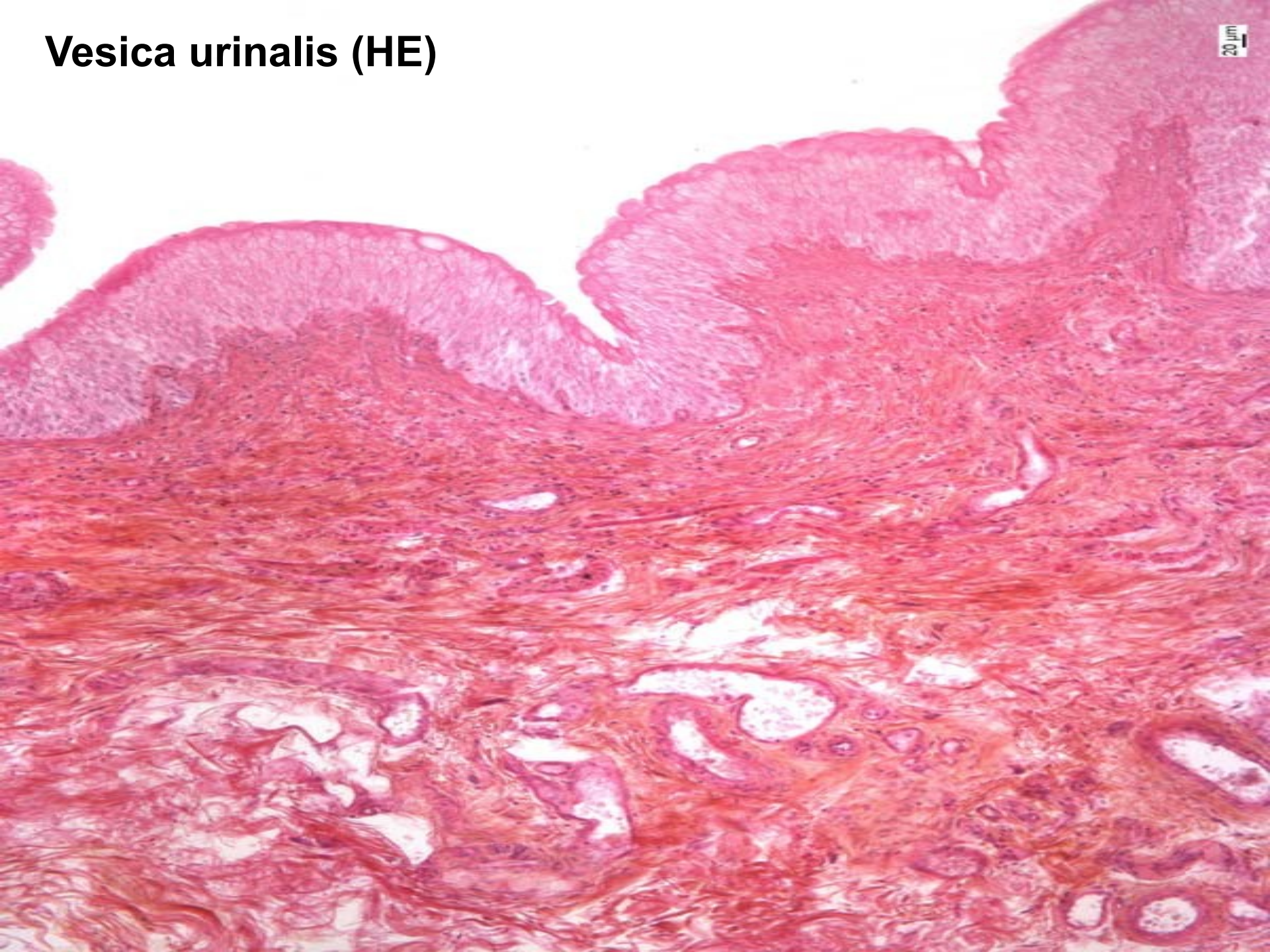
# Vesica urinalis (HE)



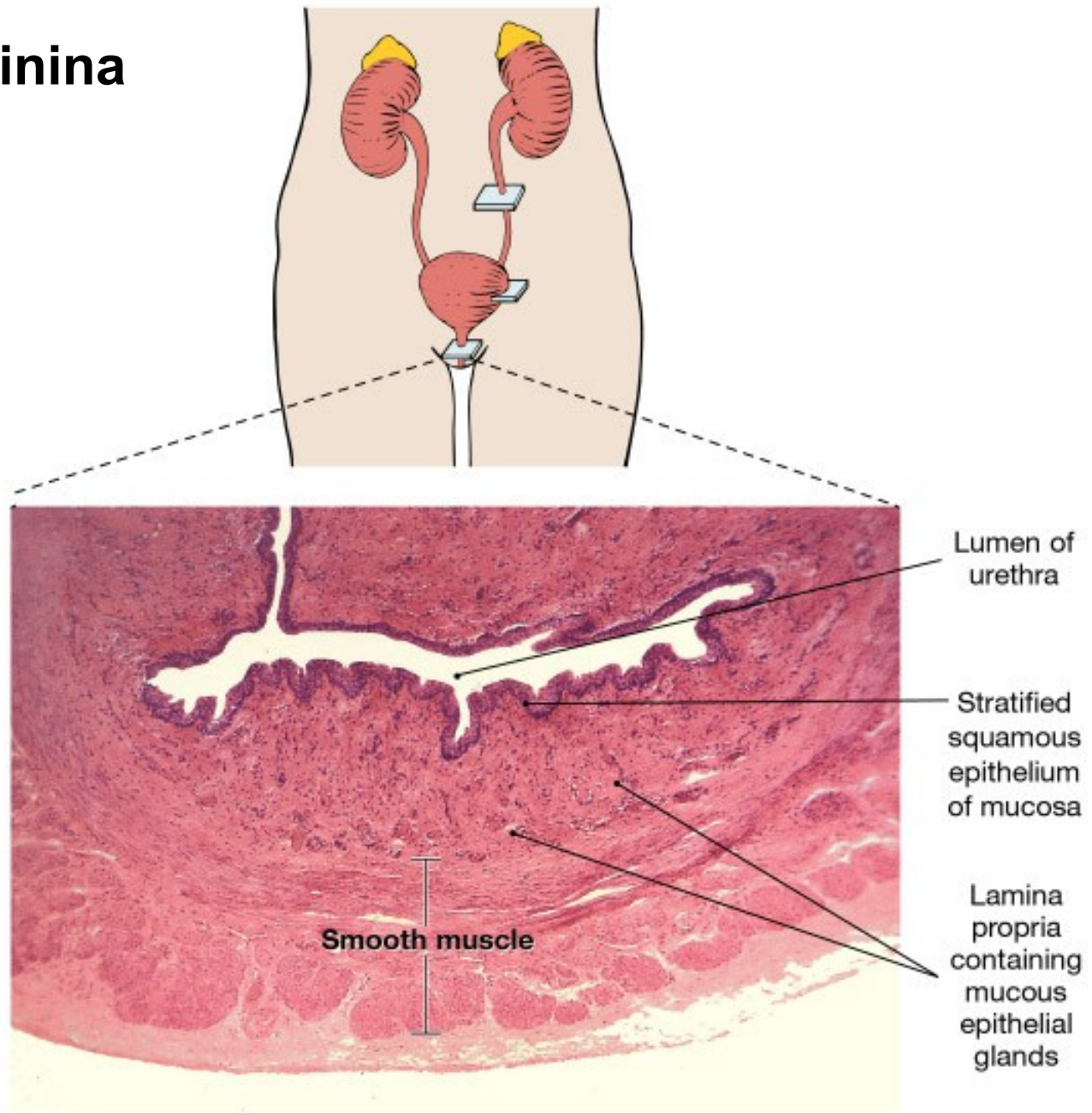


# Vesica urinalis (HE)

20  $\mu$ m



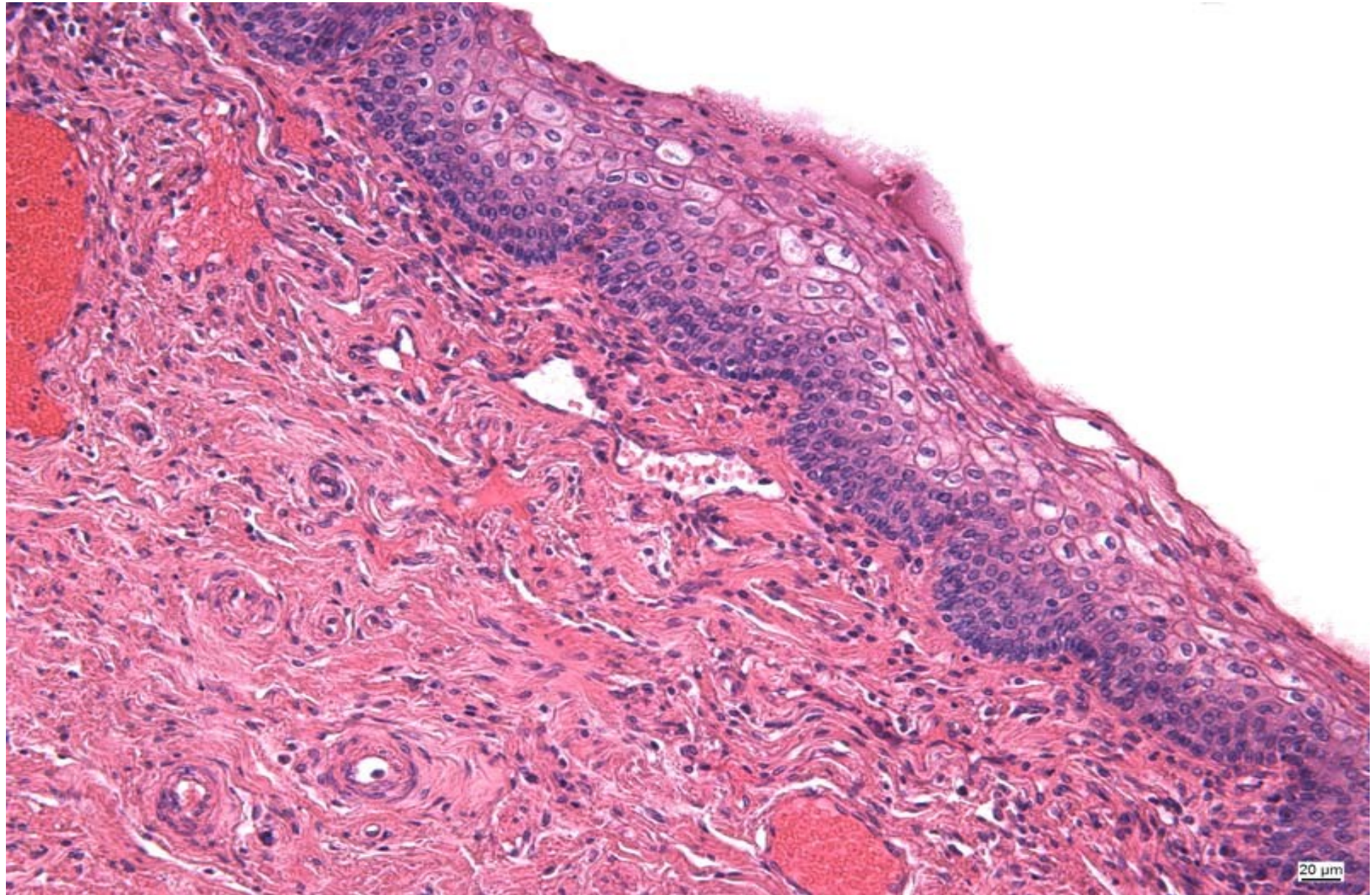
# Urethra feminina



(c) Female urethra (LM × 61)

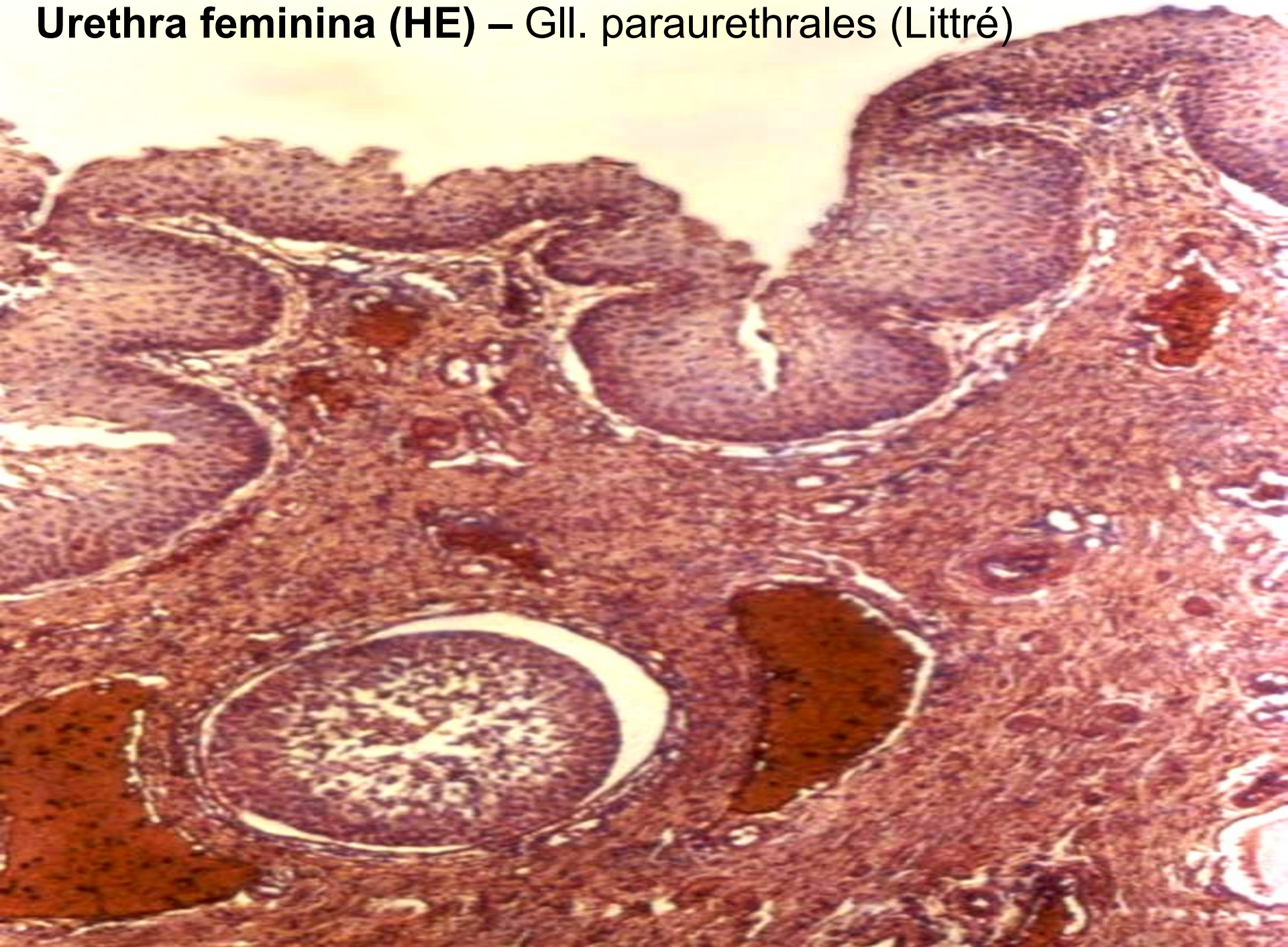


# Urethra feminina





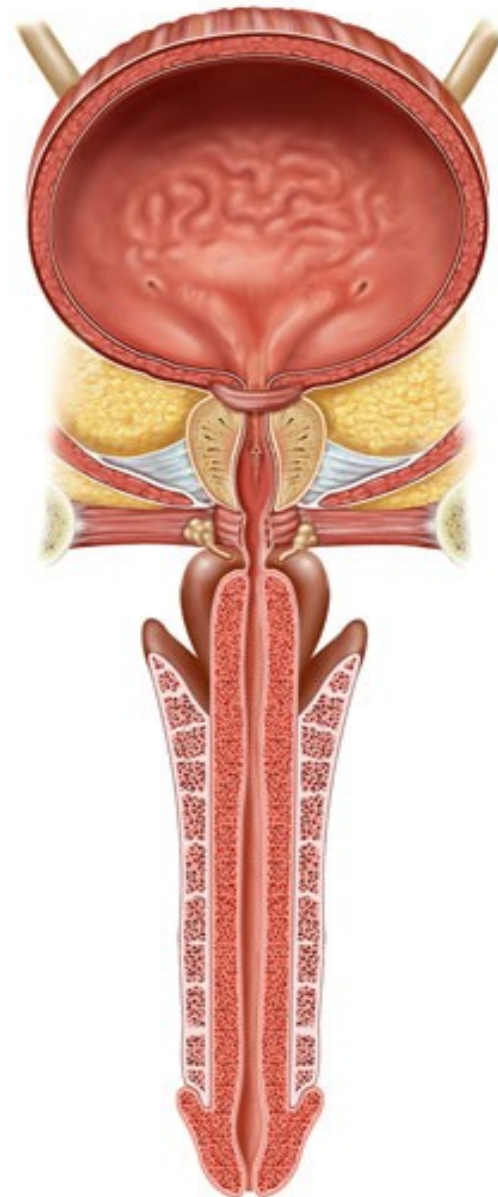
**Urethra feminina (HE) – Gll. paraurethrales (Littré)**





# Urethra masculina

- Pars intramuralis
  - přechodní ep.
- Pars prostatica
  - přechodní ep.
  - od colliculus seminalis:
    - víceřadý cyl.ep.
- Pars diaphragmatica
  - vrstevnatý cyl. ep.
  - Tunica musc: *m. sphincter urethrae ext.*
- Pars spongiosa
  - vrstevnatý cyl. ep.
  - ve fossa navicularis:
    - vrstevnatý dlaždicový

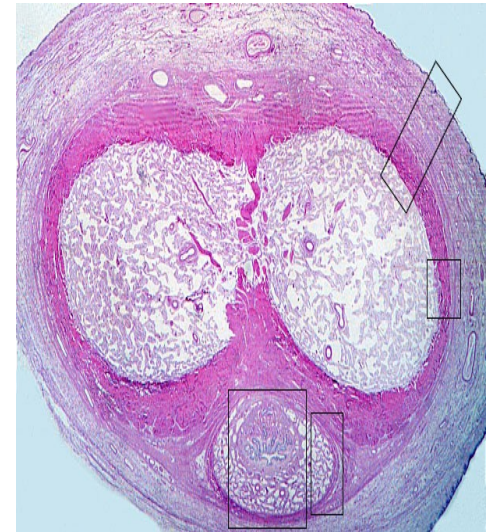
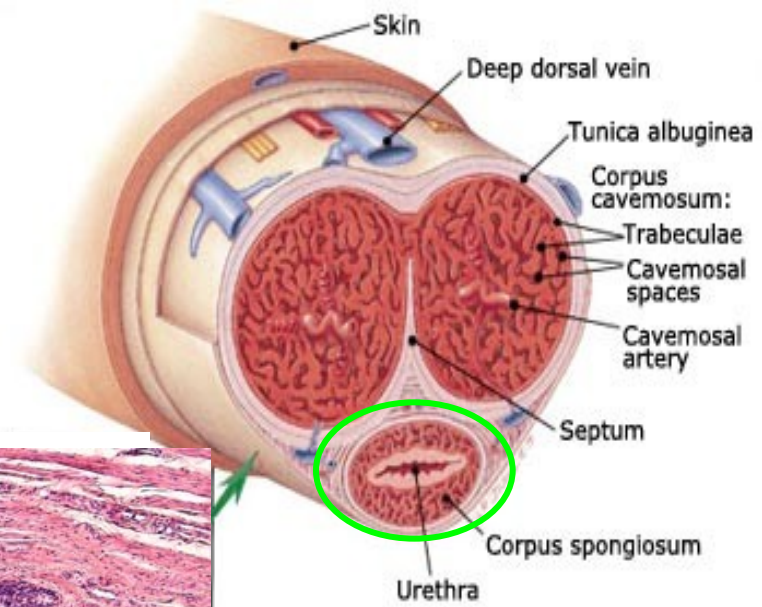
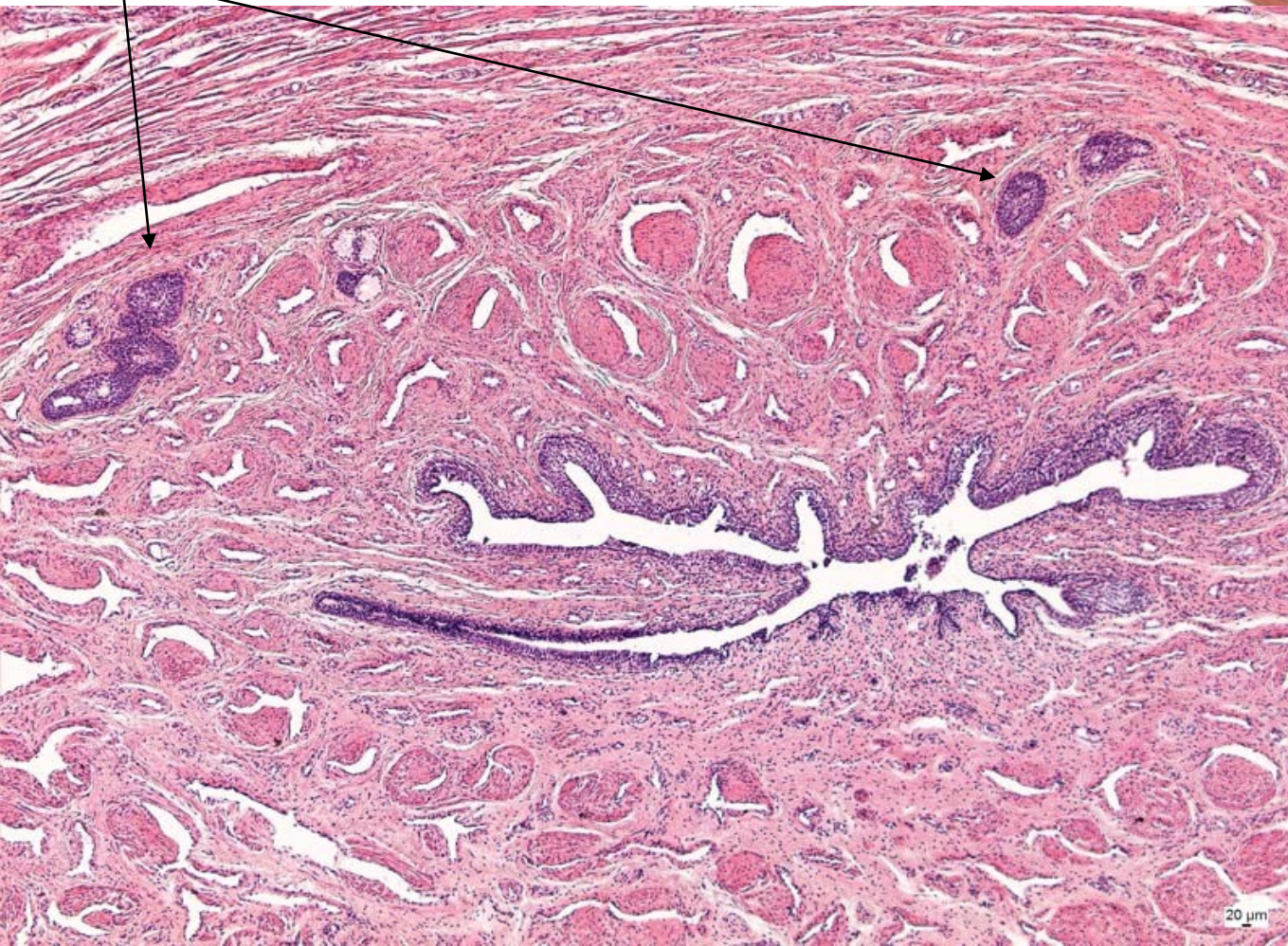


(a) Male



# Urethra masculina – pars spongiosa

Gll. paraurethrales (Litré)

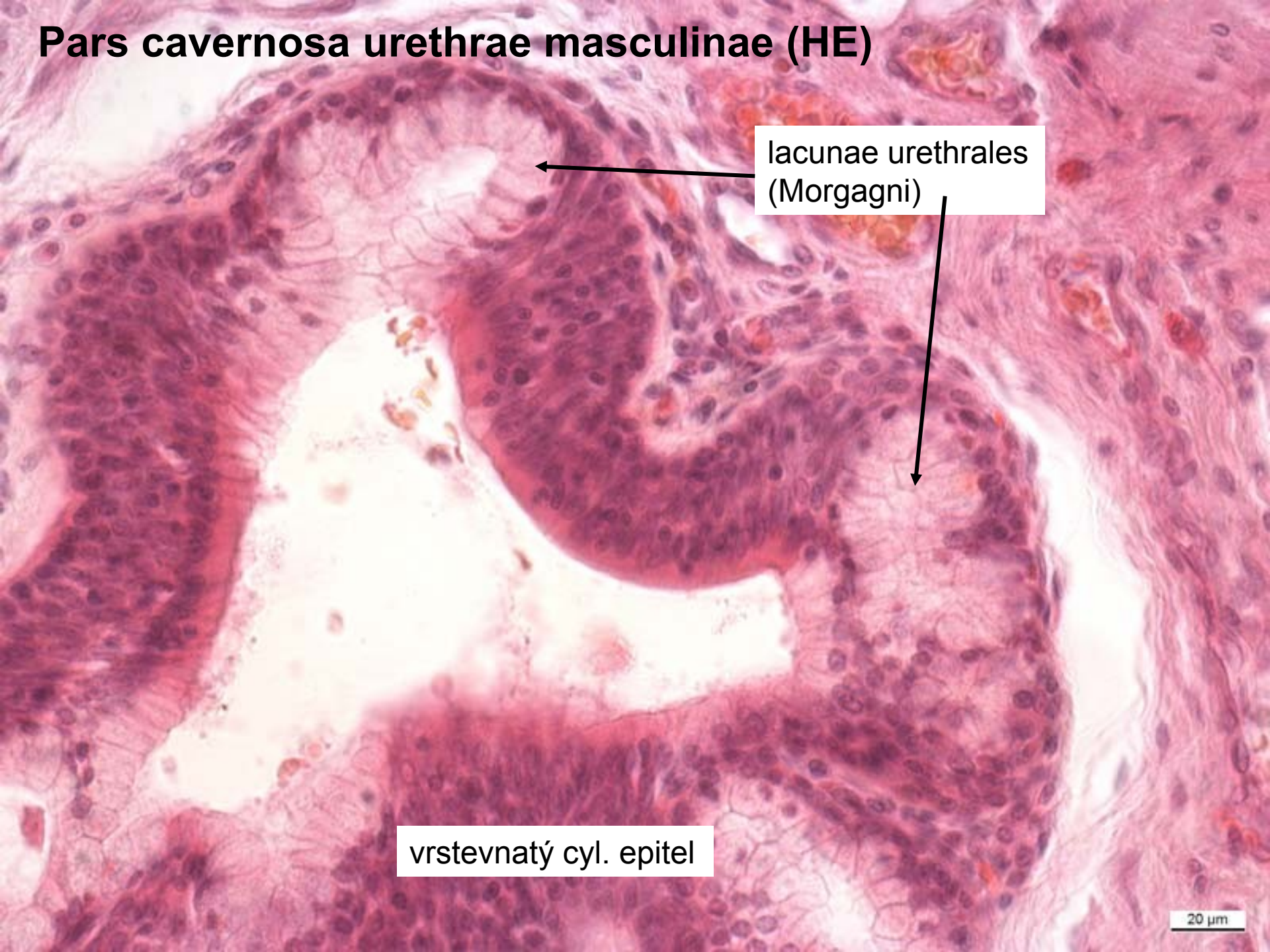




# Pars cavernosa urethrae masculinae (HE)

lacunae urethrales  
(Morgagni)

vrstevnatý cyl. epitel



**Gll. paraurethrales (Littre)**





# Močový systém



## Preparáty:

30. **Ren**(HE)

33. **Ureter**(HE)

34. **Vesica urinalis** (HE)

35. **Urethra feminina**(HE)

41. **Penis – urethra masculina** (HE)