

* This is called a countercurrent multiplier

↓
filtrate flows in
opposite directions,
up & down

↓ the longer it is,
the more water is
reabsorbed

④ Distal convoluted tubule: adjusting pH + salt conc

a) if blood is too acidic:

- Secrete H^+ from blood into tubule

- secrete NH_4^+ into kidney to bind to acids in kidney,
thus are secreted as waste ammonium salts in
urine

b) Reverse for alkaline:

- Absorb ions

⑤ collecting duct

a) osmoreceptors in the hypothalamus detect a change
in ψ of the blood

b) neurosecretory cells secrete ADH from the axon into the
Posterior pituitary gland

c) stimulated by an action potential = releases NRT into the
blood

d) Travels through the blood to cells of collecting duct (are the
target cells)

e) cells have osm receptor, which are complementary to
ADH

f) ADH binds to receptors, leading to an enzyme controlled
reaction

g) vesicles containing aquaporins migrate & fuse to cp wall

h) so cp is more permeable to water and more is reabsorbed
⇒ volume of urine decreases

⇒ ψ decreases

Preview from Notesale.co.uk
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The production of urine

There are many stages involved in the production of urine by the nephrons. They can be summarised as follows:

1. Ultrafiltration.
2. Selective reabsorption (including water reabsorption)
3. Secretion.

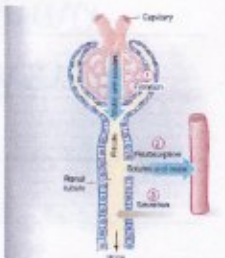


Figure 14-21 Three functions in the mammalian nephron: (a) ultrafiltration, (b) reabsorption, and (c) secretion. The filtrate is reabsorbed in the proximal convoluted tubule, the loop of Henle, and the distal convoluted tubule. The filtrate is secreted in the distal convoluted tubule. The filtrate is excreted in the collecting duct.

Ultrafiltration

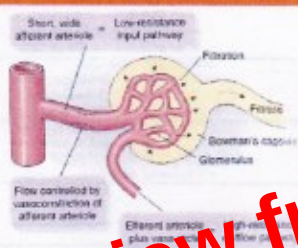


Figure 14-22 The renal glomerulus. (a) The afferent arteriole (short, wide) carries blood into the glomerulus. (b) The efferent arteriole (long, narrow) carries blood out of the glomerulus. The glomerulus is a tuft of capillaries. The filtrate is reabsorbed in the proximal convoluted tubule, the loop of Henle, and the distal convoluted tubule. The filtrate is secreted in the distal convoluted tubule. The filtrate is excreted in the collecting duct.

*afferent arteriole is wider than efferent arteriole. Higher pressure coming in than out in pressure. Subst went out of the capillaries into B.C, along with solutes.

Ultrafiltration

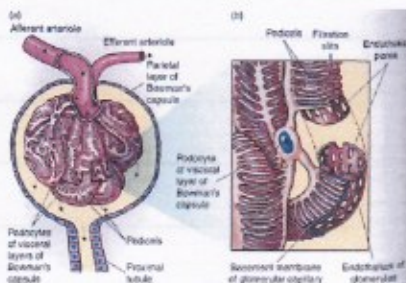


Figure 14-23 (a) The lower (efferent) surface of Bowman's capsule is specialized for filtering the blood in the glomerular capillaries. (b) Overview of a glomerulus, the podocytes composing the visceral layer have long processes, termed pedicels, which cover the vascular endothelium. (c) Enlargement of the pedicels at point a enclosed in a box. Substances pass from the blood through the endothelial pores, across the basement membrane, and then through the filtration slits between pedicels.