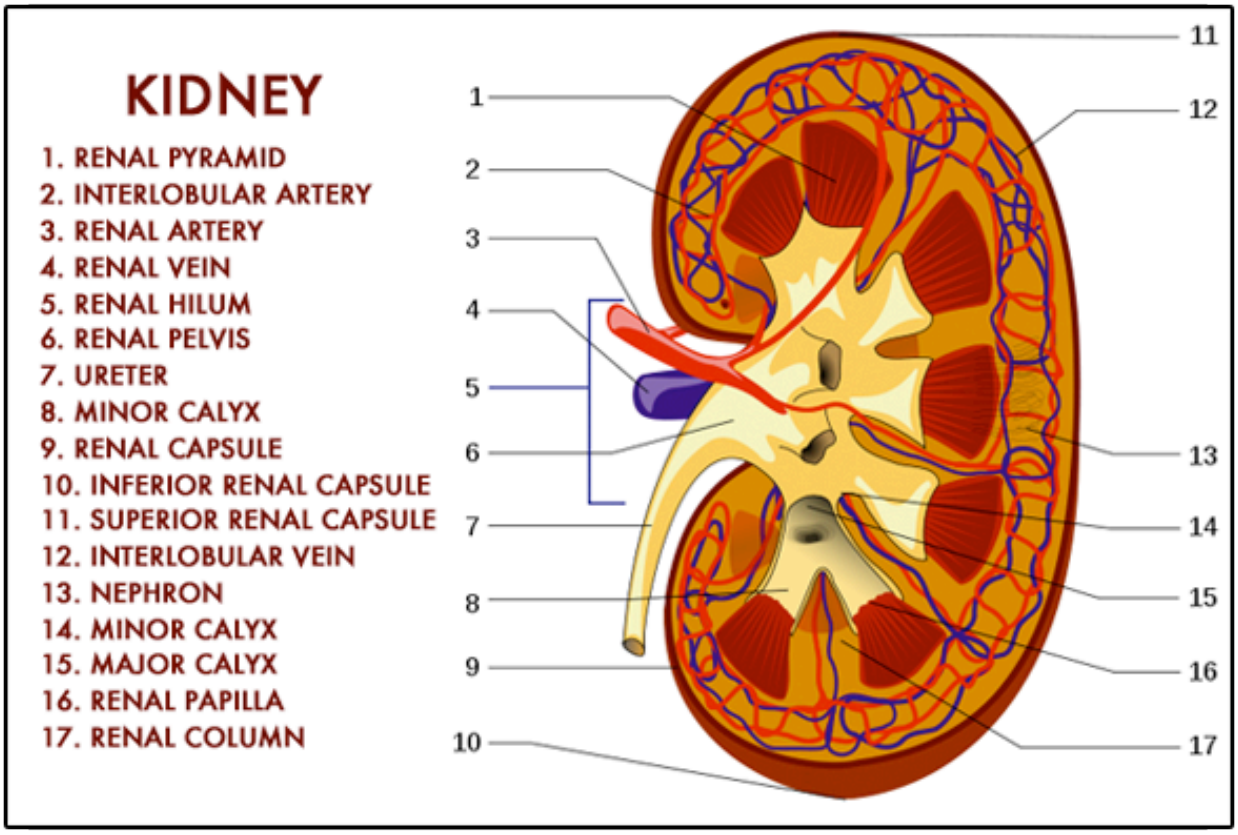
Formation of urine

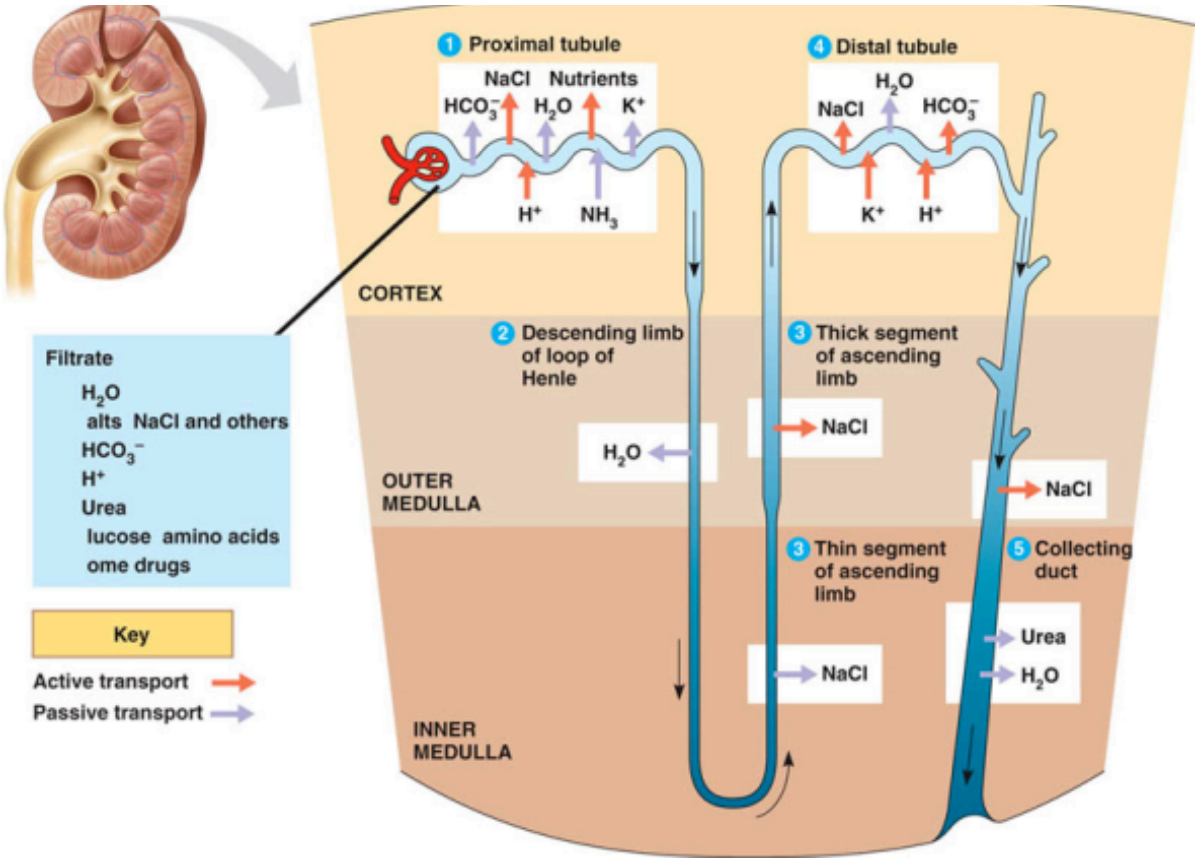


source: http://commons.wikimedia.org/wiki/File:KidneyStructures_PioM.svg

Human kidneys consist of three layers.

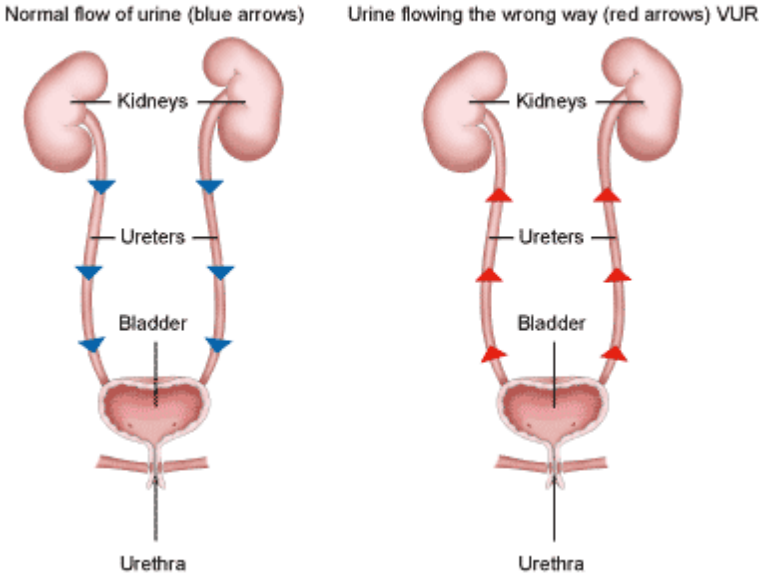
These layers are, in order, the cortex on the outside of the organ, the medulla, and the pelvis.

Blood flows into the medulla through the renal artery. In the medulla and cortex, the renal artery branches into increasingly smaller arteries. Each of these arteries ends in a blood filtration unit called a **nephron**.
Two healthy kidneys contain a total of about 2 million nephrons, which filter about 190 litres of blood daily.
The processes by which the kidneys adjust the composition of body fluids are given below:
a- **Filtration**: Water and solutes smaller than proteins are forced through the capillary walls and pores of the glomerulus into the renal tubule.
b- **Reabsorption**: Water, glucose, amino acids and ions are transported out of the filtrate into the tubule cells and then into the blood in the capillaries.
c- **Secretion**: H+, K+, creatine and drugs are removed from the peritubular blood and secreted by the tubule cells into the filtrate.



source: http://kvhs.nbed.nb.ca/gallant/biology/urine_formation.jpg

Substances not absorbed in the tubule are wastes that the body cannot use. Other wastes are secreted into the tubular fluid by the tubular cells of the kidney. These various substances, which include **ammonia**, **urea**, **uric acid**, and **excess water**, make up urine. The urine passes from the convoluted tubules into larger collecting tubules and then into the pelvis layer of the kidney. A tube called the **ureter** carries urine from each kidney into the urinary bladder. Urine collects in the **bladder** until it passes out of the body through another tube, the **urethra**. Healthy kidneys produce from 1 to 2 liters of urine daily.



source: http://www.deflux.com/images/VUR_review.gif