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## **30 SECOND ANATOMY**

**PAGE 96**

### **KIDNEYS - EXTRACTING THE URINE**

#### **3-SECOND INCISION**

Kidneys are bean-shaped structures found just above the waist between the peritoneum and the back. Kidneys don't just produce urine but regulate many body functions.

#### **30-SECOND ANATOMY**

Kidneys usually come in pairs and are found between the back and the peritoneum. They receive oxygenated blood from the renal artery and drain into the renal vein. The kidneys are a bit bigger than a fist and are functionally divided into two regions; the outer cortex and the medulla. The basic unit of the kidney is the nephron, approximately 1.2 million of which are found in the cortex. It is here that urine formation takes place by filtering the blood. Once formed the urine drains into the renal pyramids, the minor calyx, the pelvic space, the major calyx, and then leaves the kidneys via the pelvis and into the ureter.

The kidneys carry out a whole host of regulatory functions. They control long-term blood pressure (via blood volume), regulate the concentration of electrolytes in the body fluids (if you put too much salt on your chips the kidneys can excrete the excess), as well as the pH, they also excrete metabolic waste products and foreign substances (eg drugs), they can make glucose during fasting, and they produce and secrete hormones that regulate blood pressure, red blood cell production, and calcium balance for healthy bones.

#### **3-MINUTE DISSECTION**

The kidneys filter 180-litres of plasma /day (there is only 3.5 litres in the whole body!). Thus they need to reabsorb most of this back into the body. This is done under the influence of antidiuretic hormone (ADH). Alcohol inhibits ADH; reducing the amount kidneys reabsorb. This is why you pee a lot when you have been drinking! This dehydrates the body causing the brain cells to shrink producing headache and nausea - a hangover!

#### **RELATED TOPICS**

See Bladder, page 98

#### **3-SECOND BIOGRAPHIES**

Not appropriate

**30-SECOND TEXT**

Marina Sawdon

**ILLUSTRATIONS**

Please could I use fig 4.124 on page 323 from Gray's Anatomy for Students?

If we have to use the 20<sup>th</sup> Edition of Gray's Anatomy, please can I use FIG. 1127–  
Vertical section of kidney?