

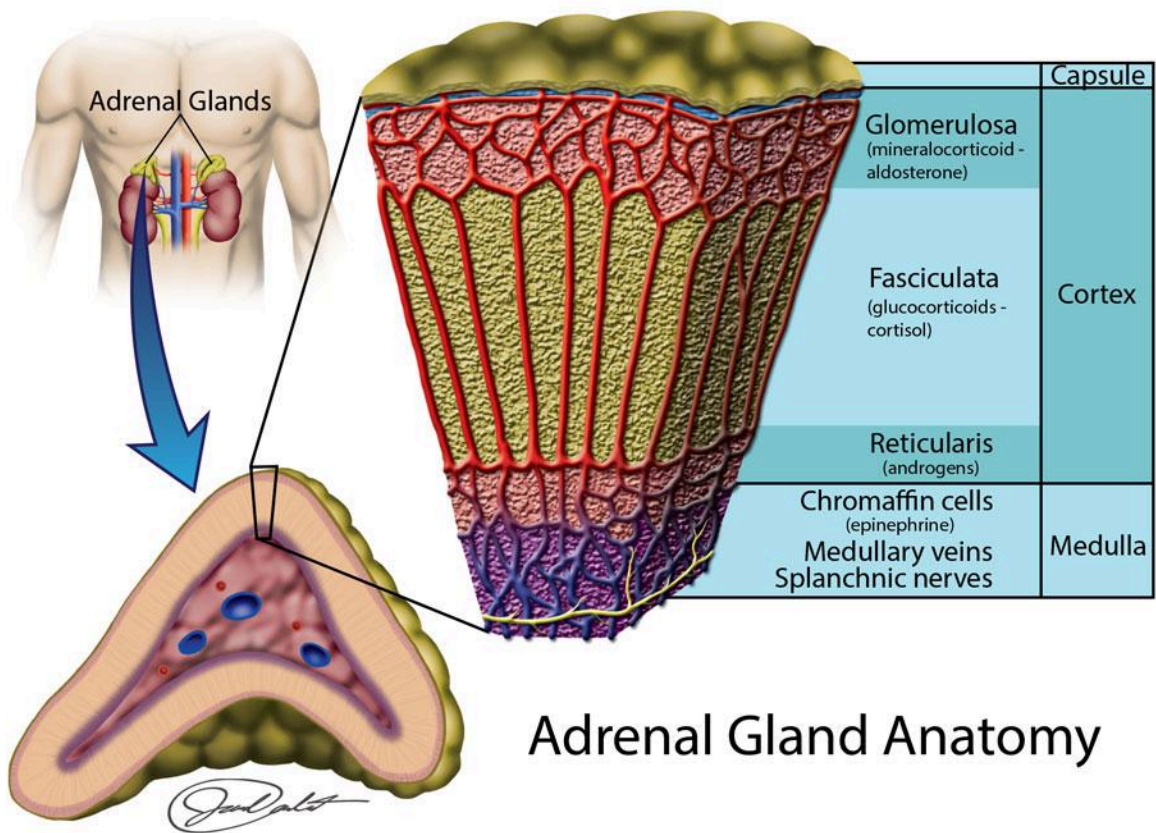
### 5.2.1

## Adrenal Gland

The two adrenal glands that sit on top of the kidneys secrete various hormones from the adrenal cortex and medulla. The most superficial layer of the cortex is called the **zona glomerulosa** and is responsible for the production of mineralocorticoids like aldosterone. The middle layer of the adrenal cortex is called the **zona fasciculata** and produces glucocorticoids like cortisol. The deepest layer of the cortex is the **zona reticularis** and produces sex steroids or androgens. The adrenal medulla makes the catecholamines epinephrine and norepinephrine. The hormones produced by the adrenal cortex are steroid hormones (which means they are derived from cholesterol). The cells in the cortex take in cholesterol via LDL particles and then convert it into the type of steroid hormone that dominates in each of the zones mentioned.

Once in the blood, these lipid-soluble steroid hormones bind to different steroid binding globulins produced by the liver so they can be transported within the predominantly water-based plasma. Some examples include cortisol binding globulin (CBG) and sex hormone binding globulin (SHBG) which binds to androgens like testosterone. There are also aldosterone specific carrying globulins. The protein albumin can also serve to transport all of these substances.

**Free hormone** is a term used to describe the quantity of a steroid hormone NOT bound to a binding globulin. This hormone is available to enter a cell and exert its effect. Conditions that affect the liver and its production of albumin and binding globulins can have significant effects on the bioavailability of the steroid hormones.



## Adrenal Gland Anatomy

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