**Adrenal Gland Learning Objectives**

1. Identify the functional zones (one medullary and three cortical zones) of the adrenal glands and the principal hormones secreted from each zone.
2. Understand the general pathways of the adrenal steroid hormones biosynthesis (glucocorticoids, mineralocorticoids, and androgens).
3. Understand the cellular mechanism of action of adrenal cortical hormones.
4. List the major mineralocorticoids and identify their biological actions and target organs or tissues.
5. Understand the differential regulation of cortisol versus aldosterone release.
6. Describe the principal physiological stimuli that cause increased mineralocorticoid secretion. Relate these stimuli to regulation of sodium and potassium excretion.
7. Identify the causes and consequences of a) over-secretion and b) under-secretion of mineralocorticoids.
8. Identify the major physiological actions and therapeutic uses of glucocorticoids.
9. Describe the components of the neuroendocrine axis that control glucocorticoid secretion.
10. Identify the causes and consequences of a) over-secretion and b) under-secretion of glucocorticoids and adrenal androgens.
11. Identify the chemical nature of catecholamines, their biosynthesis, and how they are degraded and removed from the body.
12. Describe the biological consequences of activation of the adrenal medulla and identify the target organs or tissues for catecholamines along with the receptors that mediate the response.
13. Name the key stimuli causing catecholamine secretion. List the factors that can modulate: a) the secretory response and b) the responses of target tissues.
14. Describe the interactions of adrenal medullary and cortical hormones in response to stress.
15. Identify disease states caused by an over-secretion of adrenal catecholamines.