

Hormone Summary!	Amino Acid Derivatives			
	Proteins/Peptides	Catecholamines	Thyroid Hormones	Steroid Hormones
Biosynthesis Pathway	<ul style="list-style-type: none"> •Comprised of Amino Acids •Precursor processing (preprohormones and prohormones) 	Enzymatic modification of tyrosine Synthesized and stored in adrenal medulla, neurons and EC cells in GI tract	<ul style="list-style-type: none"> •Uptake of iodide and amino acids •Iodinated at tyrosine residues on Thyroglobulin •Coupling of iodinated tyrosine residues to form T3/T4 •Release of T3/T4 from TG and Cell 	Derived from cholesterol Enzymatic processing of cholesterol Steroid hydroxylase and dehydrogenase enzymes
Hormone Storage & Release	Regulated- Stored in membrane-bound vesicles and released by exocytosis Constitutive- Released as it's synthesized	Regulated and stored in secretory vesicles	Stored in the follicular lumen (colloid)	Produced as required
Solubility	Polar	Polar	Non-polar	Non-polar
Protein Binding	Not extensively protein bound	Unbound or loosely bound to albumin	Highly protein-bound	Highly protein-bound
Systemic Half-life	<ul style="list-style-type: none"> •Minutes to hours •Peptides generally have a shorter half-life than proteins 	Short half-life Minutes	•Long half-life	•Vary with steroid (min to hours)
Receptors at Target Cells	Cell surface receptors	Binds to cell surface receptor	Readily crosses the cell membrane (facilitated diffusion and transport) Binds to intracellular receptors	
Clearance Mechanisms	<ul style="list-style-type: none"> •Removed by endocytosis with receptor •Immune mediated •Enzymatic degraded •Urinary excretion 	<ul style="list-style-type: none"> •Enzymatic degraded via COMT/MAO •Removed by endocytosis with receptor 	<ul style="list-style-type: none"> •Inactivated by deiodination •Phase II metabolism 	Often undergo further modification in a non-steroidogenic cell Inactivation modifications in liver followed by excretion in urine (phase I and II metabolism)
Example Hormones	Insulin, Glucagon, GH, ACTH	Norepinephrine and epinephrine	Iodothyronines	Cortisol