

PTA/OTA 106: Endocrine System – Unit #1

Endocrine gland	Hormone	Gland/cells affected by this hormone	Action	Disorders (see glossary below for more info)
Hypothalamus	TRH (Thyrotropin releasing hormone)	Anterior pituitary/ Thyrotrophs	Causes ant. pit. to release TSH (thyroid stimulating hormone), which causes thyroid's follicular cells to produce T3-T4, which regulates metabolism, growth & development	Hyper: Grave's disease, exophthalmos, goiter Hypo: cretinism (child); myxedema (adult)
Hypothalamus	CRH (Corticotropin Releasing hormone)	Anterior pituitary/ Corticotrophs	Causes ant. pit. to produce ACTH (adrenocorticotrophic hormone), which causes adrenal gland to produce glucocorticoids for anti-inflammatory response, resist stress	
Hypothalamus	GhRH (Growth Hormone Releasing hormone)	Anterior pituitary/ Somatotrophs	Causes ant. pit. to produce HGH (Human Growth Hormone) which targets general body cells, resulting in growth, tissue repair	
Ant. Pituitary	ACTH (Adrenocorticotrophic hormone)	Adrenal gland	adrenal gland produces glucocorticoids for anti-inflammatory response, resist stress	Hyper: Cushing's syndrome Hypo: Addison's disease
Ant. Pituitary	TSH (Thyroid stimulating hormone)	Thyroid gland (follicular cells)	Thyroid produces T3-T4 for metabolism, growth & development	Hyper: Grave's disease, exophthalmos, goiter Hypo: cretinism (child); myxedema (adult)
Ant. Pituitary	HGH (Human Growth Hormone)	Targets general body cells	Growth, tissue repair	Hyper: gigantism (child); acromegaly (adult) Hypo: pituitary dwarfism (child)
Ant. Pituitary	PRL (Prolactin)	women's mammary glands	Milk production	Hyper: galactorrhea amenorrhea; Hypo: decreased milk secretion

Ant. Pituitary	FSH (Follicle-stimulating hormone)	Targets ovaries & testes	Causes follicle development; spermatogenesis	Hypo: sterility in men & women
Ant. Pituitary	LH (Luteinizing hormone)	Targets ovaries, corpus luteum & Leydig's cells	Causes ovulation, produces progesterone or testosterone	Hypo: miscarriage, irregular menses (women); sterility (men & women)
Ant. Pituitary	MSH (Melanocyte-Stimulating Hormone)	Targets melanocytes	Produces melanin (skin pigment)	
Thyroid gland	T3 & T4	General body cells	Thyroid produces T3-T4 for metabolism, growth & development	Hyper: Grave's disease, exophthalmos, goiter Hypo: cretinism (child); myxedema (adult)
Thyroid gland	Calcitonin	Targets bones (osteoblasts)	Stimulates osteoblasts, inhibits osteoclasts; lowers blood calcium levels (more bone deposition)	
Parathyroid glands	PTH (parathyroid hormone)	Targets bones (osteoclasts)	Stimulates osteoclasts to demineralize bones, which increases blood calcium levels (inhibits osteoblasts)	Hyper: Excess bone demineralization, brittle bones Hypo: muscle tetany
Pineal gland	Melatonin Serotonin	Neurons in the brain particularly the Hypothalamus Acts as a hormone and a neurotransmitter	↑ At night ↓ during day Produced by a light limited enzyme Produces circadian rhythms and induces sleep. Believed to help regulate anger /aggression, body temperature, mood, sleep, and sexuality, appetite,	Hyper: Sleepiness, SAD, jet-lag Hypo: Insomnia Hyper: Serotonin syndrome Hypo: Insomnia and (?) increase in anger/aggression

Disorders mentioned above:

Acromegaly: excessive amount of growth hormone is released after puberty when most of epiphyseal cartilages have already closed; causes abnormal growth of hands, feet, lower jaw, skull, clavicle
Addison's disease: a condition caused by the hyposecretion of glucocorticoids and Mineralocorticoids; characterized by an inability to mobilize energy reserves and maintain normal blood glucose levels
amenorrhea – the failure of menarche to appear before age 16, or a cessation of menstruation for 6 months or more in an adult female of reproductive age

cretinism – a condition caused by hypothyroidism in infancy; marked by inadequate skeletal and nervous development and a metabolic rate as much as 40% below normal levels

Cushing's disease – a condition caused by the hypersecretion of glucocorticoids; characterized by the excessive breakdown and relocation of lipid reserves and proteins

exophthalmos – protrusion of the eyes can appear as a result of hyperthyroidism, where thyroid hormones are produced in excessive quantities

goiter – an abnormal enlargement of the thyroid gland

myxedema – symptoms of hyposecretion of thyroid hormones, including subcutaneous swelling, hair loss, dry skin, low body temperature, muscle weakness and slowed reflexes

Serotonin Syndrome: A rare condition that can be life-threatening. May result from adverse drug interactions.