

3/23/15

## Endocrine System (cont) late

-Hypothalamus—hypophysiotropic endocrine (7)

-stimulate(5)

1. corticotropin-releasing hormone (CRH)—Adrenocorticotropin hormone (ACTH) (tells us where we will end up with this process)

\*will be responsible for where an endocrine comes from and where it goes to (names will be present)

2. Thyrotropin-releasing hormone (TRH)—thyroid stimulating hormone(TSH)

3. Growth hormone-releasing hormone (GHRH)—growth hormone (GH)

4. Gonadotropin-releasing hormone (GnRH)—lutenizing hormone(LH) **AND** follicle stimulating hormone (FSH)

5. prolactin-releasing factor (PRF)—prolactin

-hypothalamus—hypophysiotropic endocrines (7)

-Inhibit (2)

1. somatostatin (SS)—growth hormone (GH)

2. dopamine (DA)—(inhibit) prolactin

-transmission?

To APG via portal veins

## -Anterior pituitary hormones

-ACTH—adrenal cortex—cortisol

-TSH—thyroid—T3 and T4

-GH—liver, plus—IGF-1 (insulin-like growth factor-1)

-many organs and tissues—protein synthesis, synthesis, carbohydrate and lipid metabolism

-FSH and LH—gonads—sex hormones

-prolactin—mammary gland—increase breast tissue, milk

-Beta-lipotropin—??(we don't know where they go)(puts fats into circulation)

-beta-endorphin--??(pain killer)

## -Posterior pituitary hormones

-oxytocin—lactation and labor contractions , function in males---? We don't know

-vasopressin—blood vessels and kidneys

Anti-diuretic hormone

ADH(same thing as vasopressin, used interchangeably)

-Both also act as NTs in other parts of the brain

\*oxytocin helps with social components-not fighting over females, autism has been linked to having oxytocin but not able to use it properly-not sociable

-transmission?(infundibulum) Extension of hypothalamus

### -Thyroid gland

-two lobes straddling trachea below larynx

-composed of follicles (11-20)( supercell)\* -cells make up the walls

-edged with follicular cells

-filled with colloid (extracellular!)

-very active in the fetus—brain development

\*many brain development occurs because the neurons don't develop properly because the thyroid is not doing its job

-Thyroid hormones (TH)

-T4 (aka Throxine) : most abundant in circulation

-T3 (aka triiodothyronine): (how many iodines come with it)-3and4 :most active form, best response

-Also made from T4 in effectors

-why more t4?

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-T3 will get the most work done, T4 transports better, and if we lose an iodine while in transport-were left with a t3

What is the chemical difference b/w t3 and t4 -iodine

-we have two (t3and T4) so we have a better opportunity of ending up at the cell with a better outcome

-production of these two:

-follicular cells have receptors for TSH

-TSH stimulates T3/T4 production in colloid (colloid not in cell-extracellular fluid, so T3 and T4 made outside of cell)

-our thyroid hormones then inhibits TSH and TRH

-most cells in our body have nuclear receptors that bind T3 and T4

-Thyroid Gland (contd)

-thyroid hormones (TH): metabolic effects

-stimulate metabolism (eq 2 happening -heat is produced)=generate heat

-enhance use of metabolic fuels

-promotes effects of sympathetic NS, happens faster if we have T's in the system

-neural development, thyroid gets smaller as we age

-promotes effects of growth hormone

-Disorders

-most common endocrine system disease (thyroid), we want Ts to be in a certain range to function properly

-too much or too little T's

-Hypothyroidism-too little T's

-commonly iodine deficiency, would make T3 ineffective; autoimmune disease, sea salt does not contain iodine-spike in hypo.

-no negative feedback from TH, TH can't do negative feedback, so high TSH

-excess TSH secreted

-overstimulate follicular cells, because we can't stop production, more colloid space, bigger gland

-enlarged gland (goiter)

-Symptoms: cold intolerance bc they can't create enough internal heat, increase weight, fatigue

-Hyperthyroidism-too much

-commonly graves disease; autoimmune disease (auto-self, immune-battling)

-antibodies activate TSH receptor, has the right shape and charge to be able to bind to TH receptors in cells, the competitors -agonist