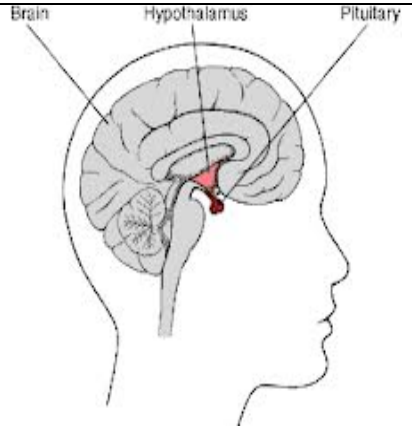
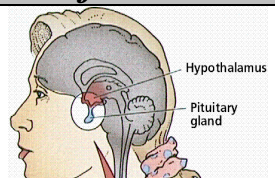
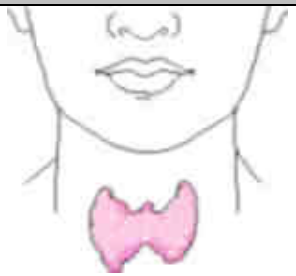
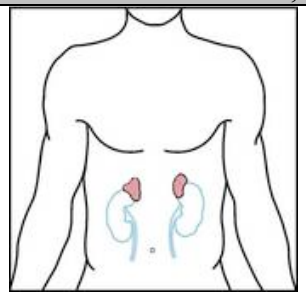
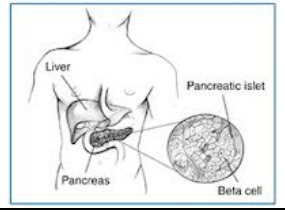
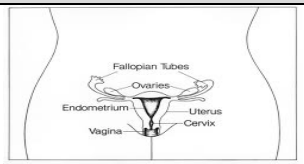
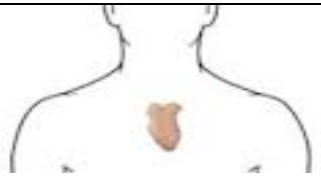
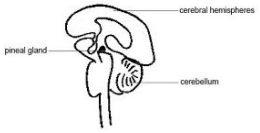
THE ENDOCRINE SYSTEM Glands

GLAND	*LOCATION*	*HORMONES*	*FUNCTIONS*
PITUITARY		*1. GH – Growth Hormone*	*1. Stimulates cells to _____ and _____*
		2. TSH-thyroid stimulating hormone	*2. Causes thyroid to release hormones for _____*
		3. FSH-follicle-stimulating hormone	*3. Targets _____ (gonadotropins)*
		4. LH-luteinizing hormone	*4. Targets _____ (gonadotropins)*
		5. ACTH	*5. Stimulates adrenal cortex for _____ and _____ metabolis*
		6. PRL-prolactin-	*6. Stimulates _____ production*
Pituitary condition	***<u>Pituitary Giant</u> -Anterior pituitary released too much growth hormone!*** ***•Often caused by tumors on the AP***		
Posterior PITUITARY		*1. ADH-antidiuretic hormone-*	*1. _____ balance, targets kidneys. Causes retention of water.*
		2 OT-Oxytocin	*2. Uterine _____*
Diseases of Posterior Pituitary	***•Diabetes Insipidus-*** too _____ _____ caused by tumor or injury causes excess release of water-dilute urine		
THYROID		*1. <u>Thyroxin</u>-T_4*	*1. Regulates _____ and the breakdown of carbohydrates, increases _____ synthesis, helps with growth and the nervous system.*
		2. <u>Tiiodothyronine</u>-T_3.-	*2. Same as thyroxin, more potent.*
		3. <u>Calcitonin</u>	*3. Regulates blood _____ and phosphate levels by decreasing release of calcium and phosphate from the bones.*

<table>
<tr><td rowspan="2">Diseases of Thyroid</td><td colspan="3">1•Grave's disease - too much hormone AKA –"Hyperthyroidism"
•Metabolism too _____ = Skinny</td></tr>
<tr><td colspan="3">2•Hashimoto's disease - too little hormone AKA "Hypothyroidism"
•Metabolism too _____=Fat</td></tr>
<tr><td>PARATHYROIDS</td><td>  </td><td>1. Parathyroid hormone (PTH)-</td><td>1. Control over blood _____(increases) and (decreases) blood phosphate levels in the body. Works with calcitonin to maintain blood phosphate and calcium levels</td></tr>
<tr><td rowspan="2">Diseases of Parathyroid</td><td colspan="3">1.Hyperparathyroidism-too much PTH released
- Causes _____ in blood _____ levels usually leached from bones.
- Leads to weakened bones, depression, fatigue, abdominal pain, kidney stones etc.</td></tr>
<tr><td colspan="3">2.Hypoparathyroidism- too little PTH released
- Causes low blood calcium levels, strong bones but _____ calcium
- Results in issues with NS, muscle contraction, possible respiratory failure</td></tr>
<tr><td rowspan="2">ADRENALS</td><td rowspan="2"> 
On Top of Kidneys</td><td>1. 1.Adrenal Medulla (Middle)</td><td>1. Adrenalin/epinepherin
•Noradrenaline/norepinepherin

•Help to maintain blood _____, salt levels, kidney function, fluid levels. Involved in flight or fight response.</td></tr>
<tr><td>2. Adrenal cortex (Outside)</td><td>2. Aldosterone-Targets cells in kidneys and maintains Na^+ and K^+ balance
•Cortisol-Glucose, protein and fat metabolism, Anti inflammatory
•Androgens-supplement gonad sex hormones</td></tr>
<tr><td>Diseases of Adrenals</td><td colspan="3">1•Addison disease -damage to adrenal cortex
–Cortisol, aldosterone and gonadotropin hypo-secretion
–low Na^+, high K^+, dehydration, low glucose, can be very serious and lead to death,
–Many side effects including hyperpigmentation</td></tr>
<tr><td colspan="3">2 Cushing syndrome
–Cortisol, hyper-secretion (usually by too much ACTH from pituitary)
–High Na^+, low K+, high glucose, water retention, large upper bodies, masculinizing traits in females</td></tr>
<tr><td rowspan="3">PANCREAS</td><td rowspan="3"> 
</td><td>1. Insulin</td><td>1. Breaks down _____ in order to provide energy for cells.</td></tr>
<tr><td>2. Glucagon</td><td>2. _____ blood sugar</td></tr>
<tr><td colspan="2">Overall: Regulates overall blood sugar levels and glucose metabolism</td></tr>
</table>

<table>
<tr><td>PANCREAS
Cells</td><td colspan="2"><u>•Alpha Cells</u>
–Make _____
–Released when your blood sugar levels get _____
–Increases blood glucose levels by _____ glycogen (storage form of glucose in the liver) and noncarbohydrates into _____</td><td><u>•Beta Cells</u>
–Make _____
–Released when your blood sugar levels get _____
–Decreases blood glucose levels by stimulating the _____ to form _____ and inhibits the breakdown of noncarbohydrates into glucose</td></tr>
<tr><td rowspan="2">OVARIES</td><td rowspan="2"> 
</td><td>1. Estrogen</td><td>1. Stimulates _____ maturation and secondary sex characteristics</td></tr>
<tr><td>2. Progesterone</td><td>2. Stimulates _____ lining for pregnancy</td></tr>
<tr><td>TESTES</td><td></td><td>1. Testosterone -</td><td>1. Production of _____ and secondary sex characteristics</td></tr>
<tr><td>THYMUS</td><td>  </td><td>1. Thymus Gland-</td><td>1. Secretes hormones called thymosins that affect production of _____</td></tr>
<tr><td>PINEAL</td><td> 
</td><td>1. Pineal Gland</td><td>1. Secretes the hormone _____ in response to light conditions outside the body. Regulates “circadian rhythms”. Helps distinguish between day and night.</td></tr>
</table>

HOMEWORK: Revisit a negative feedback loop in the context of the Endocrine System

From your Notes	Put in your own words
A. Self regulating B. Negative process, end product turns system off. C. An increase in a substance inhibits the process that leads to the increase. D. Hypothalamus, Pituitary gland and Thyroid gland 1. Hypothalamus regulates process 2. TSH stimulates thyroid to produce thyroxin (T) 3. Increase in thyroxin, increases cells metabolic activity 4. Decrease in thyroxin,decreases cells metabolic activity 5. Hypothalamus sensitive to temperature (heat) produced through metabolism and thyroxin in blood. 6. Hypothalamus→pituitary→TSH→thyroid→T→increased metabolism →heat→stops hypothalamus	

HOMEWORK: Research Diabetes – What causes it?