Endocrine glands and hormones

- The endocrine system is composed of a series of **ductless glands**.
- It communicates through the use of hormones **Negative feedback system**.

Hormones are carried through the blood.
Pituitary Gland
Growth Hormone (GH)

Too much GH

**Acromegaly: (↑ GH) irreversible**
**enlarged hands & feet, ↑ Hair growth**
painful joints muscle weakness,
**Risk of falls**

enlarged hands & feet**

Pituitary Gland
Growth Hormone (GH)

Too much Growth Hormone

**Acromegaly:**
(↑ GH) irreversible
enlarged cranium and jaw, bulging forehead, thick lips, big tongue

enlarged cranium and jaw,
Pituitary Gland
Growth Hormone (GH)

Too much Growth Hormone
- **Gigantism** (↑ GH)
- ↑ long bone length → ↑ height, weakness

Too little Growth Hormone
- Dwarfism
  - Abnormally short height
  - Normal body proportion
  - Appear younger than age
  - Dental problems due to underdeveloped jaws
  - Delayed sexual development
Pituitary Gland

Growth Hormone (GH)

Too little growth hormone leads to:
- Abnormally short height
- Normal body proportion
- May produce normal children

Pituitary Gland / Oxytocin

- Oxytocin: Releases milk and stimulates contractions in labor

Pituitary Hormone ADH**

- Antidiuretic Hormone: ADH**
  - A diuretic helps to release water/urine from the kidneys
  - An anti-diuretic slows down that release of water/urine
  - ADH causes kidneys to conserve water/urine
Pituitary Gland
Antidiuretic Hormone (ADH)

**Too much ADH = SIADH**

- Syndrome Of Inappropriate Secretion Of Antidiuretic Hormone:
  - kidneys reabsorbs water yet urine output ↓
  - fluid overload causing hyponatremia (sodium levels ↓, ↓)**

**SIADH too much ADH**

- water intoxication, without edema
- weakness, cramps
- ↓ appetite, nausea, headache, diarrhea,
- weight gain, seizures

Too much ADH = SIADH

Pituitary Gland
Antidiuretic Hormone (ADH)**

- Causes urine to be diluted
- Urine won’t concentrate
- May cause dehydration
- ↑ sodium levels

Diabetes Insipidus

- Like a sieve
  - Urine won’t concentrate

**Polyuria**

- Excessive urination

**Polydipsia**

- Excessive thirst

**Dry skin; poor skin turgor** (normal elasticity in skin)
Thyroid gland abnormalities

Thyroid gland Hormones

<table>
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<tr>
<th>Thyroid Stimulating Hormones (TSH)**</th>
<th>Action of hormones</th>
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<td>□ TSH**</td>
<td>□ Metabolism</td>
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<td>□ Throxine** (T4)</td>
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<td>□ Calcitonin causes ↓ in calcium in blood</td>
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Hyperthyroidism k ↑ SH

GRAVES DISEASE**

- ↑ Thyroid Stimulating Hormones
- ↑ metabolic processes
- edema in neck
- bulging eyeballs,
- dysphasia

- Exophthalmia

Calcitonin causes ↓ in calcium in blood
Thyroid Stimulating Hormones

Hyperthyroidism
- ↑ appetite,
- ↑ activity level,
- nervous, jittery,
- ↑ pulse and temp,
- insomnia

Graves Disease **
Graves’ disease is a common cause of hyperthyroidism, an overproduction of thyroid hormone, which causes enlargement of the thyroid and other organs such as eyelids, heart instability, and anxiety.

Hypothyroidism

Role Play Time
Thyroid Stimulating Hormones

Hypothyroidism = ↓TSH
- ↓ metabolism
- ↓ body temp
- ↓ memory/slow thinking
- ↓ B/P
- ↓ respirations
- ↓ libido

Hypothyroidism = ↓TSH
- Intolerance to cold
- Weight gain
- Depression
- Impaired memory
- Lethargic
- Anorexia
- Constipation

Goiter:
- ↓ iodine causes Goiter
- due to poor diet
- ↓TSH which causes
- ↑ in thyroid gland size
**Parathyroid glands (4 glands)**

Hyperparathyroidism
- Hypercalcemia: excess of calcium in the blood
- Causing:
  - Tetany (spasms)
  - Stridor, harsh vibrating sound heard during respiration
  - Cyanosis
  - Numbness in skin
  - Anxiety
  - Depression, ↑ phosphorus

Hypoparathyroidism
- Calcium leaves bones and goes into blood.
- Causes bone pain, muscle weakness, fractures
- Kidney stones
- Heart impairment
- Chvostek’s and Trousseau’s signs showing not enough calcium in blood
- Parkinson-like syndrome

**Adrenal Glands hormones**

1. Sex hormones
   - Androgens (male)
   - Estrogens (female)
2. Mineralocorticoid
   - Regulate sodium and potassium
3. Glucocorticoid
   - Helps body respond to stress
   - Maintains glucose regulation
4. Epinephrine (adrenaline)
5. Norepinephrine
Adrenal hyperfunction (Cushing's syndrome)**

- Overstimulation of pituitary gland
- Excessive corticosteroids and glucocorticoids
- Liver releases Glucose
- Diet low in Sodium*

Cushing's Disease

- http://video.google.com/videoplay?docid=899136968133664999&q=CUSHINGS+DISEASE&total=29&start=0&num=10&so=0&type=search&plin dex=4

Cushing's Disease**

- Susceptible to infections
- Depression
- Loss of libido
- Moonface *
- Buffalo hump*
- Weight gain*
Addison's Disease

**Adrenal hypo function**
- Extreme weakness
- Darkly pigmented skin and mucous membranes
- Loss of appetite/ Weight loss
- Hypoglycemia: abnormal decrease of sugar in the blood
- Hyponatremia
- Hyperkalemia: abnormally high concentration of potassium in the blood

President Kennedy had Addison's