

# Metabolic Gland = Thyroid Gland

---

- Pituitary Gland regulates the thyroid gland with TSH.
- Thyroxine regulates metabolism
- Targets all body cells
  - Increases energy use in all cells
    1. **Increase glucose consumption for ATP production**
    2. **Increase fatty acid consumption for ATP production**
    3. **Increase oxygen consumption for ATP production**
    4. **Increase mitochondrial biogenesis for more ATP production**
- Targets kidneys
  - **Stimulates release of erythropoietin (EPO), a hormone that stimulates the bone marrow to make more RBCs**
- Targets Cardiac Muscle
  - **Increases Heart Rate and Blood Pressure**
- A negative feedback loop regulates thyroxine levels in the blood
  - When thyroxine levels are adequate, there is inhibition of TSH from the pituitary gland.
  - When thyroxine levels are low, there is stimulation of TSH from the pituitary gland.
    - ✦ Hypothyroidism often is detected when TSH are high.

<b>Hypothyroidism</b>	<b>Hyperthyroidism (Grave's disease is typical cause)</b>
Pale	Flushed
Tired	Agitated
Cold	Hot
Weight Gain	Weight Loss
Low HR, Low BP	Palpitations, High BP
Dry Skin, Hair Loss	Exophthalmos (eyes bulge out)
Depression	Irritability