**Guiding Question-** How does your body send delayed signals?

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| **Endocrine Glands** | **Shape/Location** | **Hormones** | **Function** |
| **Pituitary Gland**  MASTER GLAND | -Lower Brain  cerebrum | * growth hormone — which regulates growth. * thyroid stimulating hormone (TSH) — which tells the thyroid gland to make hormones. * prolactin — which controls breast milk production. * adrenocorticotrophic hormone (ACTH) — which tells the adrenal glands to make hormones. * Oxytocin | -**Growth** especially height  -**Reproduction:** Bonding and uterine contractions |
| **Hypothalamus**  BOSS | Lower Brain  Cerebrum-secretes to the **pituitary** | Antidiuretic Hormone (ADH)  The thyrotropin-releasing hormone (TRH), gonadotropin-releasing hormone (GnRH), growth hormone-releasing hormone (GHRH), corticotropin-releasing hormone (CRH), somatostatin, and dopamine are released from the hypothalamus into the blood and travel to the anterior pituitary. | -Water retention  Regulation of reproductive system & metabolism |
| **Thyroid** | -Butterfly shape  -Neck Area over the trachea | T3/ T4  -Calcitonin | **Metabolism**  Heart rate  Temperature  Calcium Levels |
| **Thymus** | Chest  (smaller in adults) | T Cells | -**Immune Function** |
| **Pancreas** | -Gut  -Long Slug shape | Insulin/ Glucagon | -**Regulating Sugar** levels |
| **Adrenal Gland** | -Above kidneys | Epinephrine (Adrenaline)  Cortisol | -**Fight or Flight**  -Managing stress |
| **Testes** |  | Testosterone | -Male **development** and characteristics  **Reproduction** |
| **Ovaries** |  | Estrogen | -Female development and characteristics  **Reproduction** |
| **Pineal Gland** | -Brain | Melatonin | **Sleep regulation** |

**Practice Questions**

1Which gland is involved with an immune response? **Thymus**

2Which hormone would be released if you haven’t had a drink of water all day? **ADH**

3 Which gland is activated if you encounter a wild bear? **Adrenaline Gland**

4 Imagine you are a doctor and a patient comes to you with a growth problem. Which gland would you suspect is responsible for this problem and why?

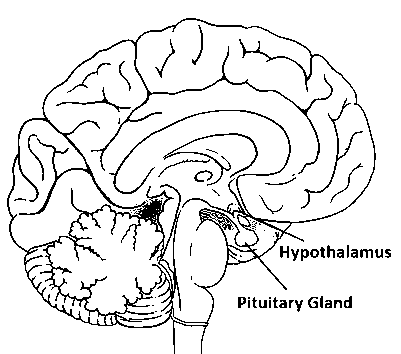
**Pituitary Gland** because it secreted Growth Hormone.

5 Imagine you are a nutritionist and a patient comes to you with a weight problem. Which gland could you suspect is involved in this problem and why?

**Pancreas,** they could be retaining sugar. It could also be other glands like the **Thyroid.**

**Guiding Question**- How does your body use the endocrine system to respond to changes in the environment?

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| **Stimulus** | **Organ** | **Increase** | **Decrease** |
| Temperature | Hypothalamus | -Sweat  -Increased Blood Flow | -Shivering  -Decreased Blood Flow |
| Sugar | Pancreas | Insulin | Glucagon |
| Calcium | Thyroid | Calcitonin | Parathyroid Hormone  (PTH) |
| Water | Hypothalamus | Antidiuretic Hormone (ADH) Decreased | ADH Increased |

1 Imagine you were stuck in a hot desert. Describe what would happen in your body including one gland and two responses.

Your hypothalamus would be active. It would increase sweat, increase blood flow and release ADH.

2 What hormone would be released if you eat a large bowl of sugary cereal for breakfast? Insulin from the Pancreas.

3 Which gland is responsible for regulating calcium levels? If you were taking calcium supplements and your calcium levels still remain low? Thyroid. You may not be secreting enough calcitonin or the gland may not be sensing the amounts.

4 If you can’t sleep at night and are napping during the day what gland may be involved?

Pineal Gland. It could also be a thyroid issue.