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

|  |  |  |  |
| --- | --- | --- | --- |
| **Endocrine Glands** | **Shape/Location** | **Hormones** | **Function** |
| Pituitary Gland | -Lower Brain |  | -Growth especially height |
| Hypothalamus | -Lower Brain |  | -Water retention |
| Thyroid |  | T3/ T4-Calcitonin | -Calcium Levels |
| Thymus |  | T Cells |  |
| Pancreas | -Gut- | -Insulin- | -Sugar levels |
| Adrenal Gland |  | -Epinephrine (Adrenaline)-Norepinephrine |  |
| Testes |  |  | -Male development and characteristics |
| Ovaries |  |  | -Female development and characteristics |
| Pineal Gland | -Brain |  | Sleep regulation |



**Practice Questions**

1 Which gland is involved with an immune response?

2 Which hormone would be released if there is a if you are in a desert without water?

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

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?

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?

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Stimulus** | **Organ** | **Stimulus Increase** | **Stimulus Decrease** |
| Temperature | Hypothalamus | --Increased Blood Flow | --Decreased Blood Flow |
| Sugar | - | - | -Glucagon |
| Calcium | - | - | Parathyroid Hormone(PTH) |
| Water | Hypothalamus | - | ADH Increased |

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

2 What hormone would be released if you eat a large bowl of sugary cereal for breakfast?

3 Which gland is responsible for regulating calcium levels? If you were taking calcium supplements and your calcium levels still remain low?

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Endocrine Glands** | **Shape/Location** | **Hormones** | **Function** |
| Pituitary Gland | -Lower Brain | -Growth Hormone (GH)-Oxytocin | -Growth especially height-Bonding and uterine contractions |
| Hypothalamus | -Lower Brain | Antidiuretic Hormone (ADH) | -Water retention |
| Thyroid | -Butterfly shape -Neck Area | T3/ T4-Calcitonin | -Metabolism-Calcium Levels |
| Thymus | Chest  | T Cells | -Immune Function |
| Pancreas | -Gut-Long Slug shape | Insulin/ Glucagon | -Sugar levels |
| Adrenal Gland | -Above kidneys | Epinephrine (Adrenaline)Cortisol | -Fight or Flight-Managing stress |
| Testes |  | Testosterone | -Male development and characteristics |
| Ovaries |  | Estrogen | -Female development and characteristics |
| 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?

|  |  |  |  |
| --- | --- | --- | --- |
| **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.