**HORMONES ASSIGNMENT PREPARATION SHEET**

**NAME** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Please complete this table.

|  |  |  |  |
| --- | --- | --- | --- |
| Hormone | Place of production | Target organ/cells | Function |
| Cortisol |  |  |  |
| Aldosterone |  |  |  |
| Melatonin |  |  |  |
| Cholecystokinin |  |  |  |
| Parathyroid hormone |  |  |  |
| Adrenaline  (epinephrine) |  |  |  |
| Noradrenaline |  |  |  |

(21 marks)

1. Complete the following. (16 marks)

The \_\_\_\_\_\_\_ gland lies across the top of the trachea. This gland has parts called the \_\_\_\_\_\_\_\_follicles. The follicle cells of this gland produce thyroglubulin. The mineral \_\_\_\_\_\_\_ is added to the thyroglubulin to produce \_\_\_\_\_\_\_\_\_\_. This mineral can be gained from \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_ products in a persons’ \_\_\_\_\_\_\_.

Other cells in the gland called C cells produce the hormone \_\_\_\_\_\_\_\_\_\_\_. This hormone controls \_\_\_\_\_\_\_\_\_\_ ion levels in the body.

Complete the diagram below for the hormone thyroxin.

|  |
| --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_gland |

\_\_\_\_\_\_\_\_\_ hormome

|  |
| --- |
| \_\_\_\_\_\_gland |

Negative

Feedback

Negative

feedback

\_\_\_\_\_\_\_\_\_\_ hormone

|  |
| --- |
| \_\_\_\_\_\_\_\_\_\_\_gland |

|  |
| --- |
| Thyroxin hormone |

There are number of disorders associated with problems in thyroxin production. For example Graves’ disease, which is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Now complete this table

|  |  |  |  |
| --- | --- | --- | --- |
| Disorder | Cause | Symptoms | Treatment |
| **Hypothyroidism** |  |  |  |
| **Hyperthyroidism** |  |  |  |

1. How Hormones Work When they reach their Target Cell

There are two main ways the hormones work at the Target cell and this is dependent on the chemicals the hormone is made from.

1. Protein ( peptide) hormones.

These are built up from \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.

Give 3 examples of Protein (peptide) hormones.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When these hormones get to the target cell they bind to \_\_\_\_\_\_\_\_\_\_\_\_\_\_Proteins on the membrane Surface of the cell. This starts a chain of events which leads to generation of second \_\_\_\_\_\_\_\_\_ within the cell (the hormone is the first \_\_\_\_\_\_\_\_\_\_). The second \_\_\_\_\_\_\_\_\_\_\_ then triggers a series of molecular changes in the cell. Another term used to describe this entire process is signal t\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. Steroid hormones.

These are built up from ­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules.

Give 3 examples of steroid hormones.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

These hormones enter the cell and bind to Receptors \_\_\_\_\_\_\_\_\_\_\_target cells, in the cytoplasm or \_\_\_\_\_\_\_\_\_\_. The hormone and the receptor join to form a Hormone-Receptor \_\_\_\_\_\_\_\_\_\_. The hormone-receptor \_\_\_\_\_\_\_\_ binds to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ regions of a \_\_\_\_\_\_\_\_ on the cell DNA. This can stimulate or sometimes inhibit \_\_\_\_\_\_\_\_\_\_\_\_\_ from those genes.

1. Cushing’s syndrome is a disorder that has the following symptoms: symptoms include:

* Weight gain around the abdomen, and obesity
* Wasting of the limbs
* A ‘buffalo’ hump of fat high on the back
* Round, red and puffy-looking face (‘moon face’)
* Muscular weakness
* Thirst
* Headaches
* High blood pressure

What is the cause Cushing’s syndrome?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the Scienctific name for Cushing’s syndrome?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(2 marks)

**HORMONES ASSIGNMENT**

**1**

|  |  |  |  |
| --- | --- | --- | --- |
| Hormone | Place of production | Target organ/cells | Function |
| Cortisol | adrenal cortex | Heart and blood vessels | elevates blood pressure and prepare the body for a [fight or flight response](http://en.wikipedia.org/wiki/Fight_or_flight_response). Can reduce inflammation |
| Aldosterone | kidney | Increases the reabsorption of Na ions and extretion of K ions. |
| Melatonin | [pineal gland](http://en.wikipedia.org/wiki/Pineal_gland) of brain also eyes and skin | Brain | regulation of the [circadian rhythms](http://en.wikipedia.org/wiki/Circadian_rhythm). Controls when you feel sleepy and want to go to bed |
| Cholecystokinin | Small intestine | Gall bladder  Pancreas  brain | Makes gall balder release bile into digestive system.  **pancreas** stimulating the release of [pancreatic digestive enzymes](http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/G/GITract.html#pancreas) into the pancreatic fluid.  Tells the brain you have had enough to eat. |
| Parathyroid hormone | [parathyroid glands](http://en.wikipedia.org/wiki/Parathyroid_gland) | Blood and bones | It acts to increase the concentration of [calcium](http://en.wikipedia.org/wiki/Calcium) in the [blood](http://en.wikipedia.org/wiki/Blood) |
| Adrenalin | Adrenal medulla | Most tissues | Reinforces the sympathetic nervous system. Any of these can be accepted |
| Nor adrenealin |

21 marks , one for each box completed properly.

1. Complete the following.

The ***thyroid*** gland lies across the top of the trachea. This gland has parts called the ***thyroid*** follicles. The follicle cells of this gland produce thyroglubulin. The mineral ***iodine*** is added to the thyroglubulin to produce ***thyroxin.*** This mineral can be gained from ***seafood and dairy*** products in a persons’ ***diet***.

Other cells in the gland called C cells produce the hormone ***calcitonin.*** This hormone controls ***calcium*** ion levels in the body. Graves’ disease, also known as

***exophthalmic goite or any of the following Parry's disease****,* ***Begbie's disease****,* ***Flajani's disease****,* ***Flajani-Basedow syndrome****, and* ***Marsh's disease***

.

Complete the diagram below for the hormone thyroxin.

|  |
| --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_gland |

\_\_\_\_\_\_\_\_\_ hormome

|  |
| --- |
| \_\_\_\_\_\_gland |

Negative

Feedback

Negative

feedback

\_\_\_\_\_\_\_\_\_\_ hormone

|  |
| --- |
| \_\_\_\_\_\_\_\_\_\_\_gland |

|  |
| --- |
| Thyroxin hormone |

There are number of disorders associated with problems in thyroxin production. For example Graves’ disease, which is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

16 marks, one mark for each correct part

3

|  |  |  |  |
| --- | --- | --- | --- |
| Disorder | Cause | Symptoms | Treatment |
| **Hypothyroidism** | Underactive thyroid gland. So not enough thyroxin produced | ANY 4 WILL DO(0.5 EACH)  Poor muscle tone   * [Fatigue](http://en.wikipedia.org/wiki/Fatigue_(medical)) * increased sensitivity to cold * [Depression](http://en.wikipedia.org/wiki/Depression_(mood)) * [Muscle cramps](http://en.wikipedia.org/wiki/Muscle_cramps) and [joint pain](http://en.wikipedia.org/wiki/Joint_pain) * [Goiter](http://en.wikipedia.org/wiki/Goiter) * Thin, [brittle fingernails](http://en.wikipedia.org/wiki/Brittle_fingernails)/hair * [Paleness](http://en.wikipedia.org/wiki/Paleness) * sweating * Dry, itchy skin * [Weight gain](http://en.wikipedia.org/wiki/Weight_gain) and [water retention](http://en.wikipedia.org/wiki/Water_retention). [Bradycardia](http://en.wikipedia.org/wiki/Bradycardia) (low heart rate: less than sixty beats per minute) * [Constipation](http://en.wikipedia.org/wiki/Constipation) * slow speech and a [hoarse](http://en.wikipedia.org/wiki/Hoarse), breaking voice. Deepening of the voice can also be noticed. * Dry puffy skin, especially on the face * Thinning of the outer third of the eyebrows. * Abnormal [menstrual cycles](http://en.wikipedia.org/wiki/Menstrual_cycles) * Low [basal body temperature](http://en.wikipedia.org/wiki/Basal_body_temperature) | medication |
| **Hyperthyroidism** | Overactive thyroid gland. So too much thyroxin produced | ANY 4 WILL DO(0.5 EACH)  [weight loss](http://en.wikipedia.org/wiki/Weight_loss), anxiety, apathy, [diarrhea](http://en.wikipedia.org/wiki/Diarrhea), palpitations and [arrhythmias](http://en.wikipedia.org/wiki/Arrhythmia) (notably [atrial fibrillation](http://en.wikipedia.org/wiki/Atrial_fibrillation)), shortness of breath, osteoperosus, [periodic paralysis](http://en.wikipedia.org/wiki/Periodic_paralysis) and eye problems | Medication and or surgery |

4. How Hormones Work When they Reach their Target Cell

There are two main ways the hormones work at the Target cell and this is dependent on the chemicals the hormone is made from.

1. Protein and peptide hormones.

These are built up from amino acids.

Examples include the following hormones: Insulin, glucagon and prolactin.

When these hormones get to the target cell they bind to Receptor Proteins on the Surface of the cell. This starts a chain of events which leads to generation of second messengers within the cell (the hormone is the first messenger). The second messengers then trigger a series of molecular changes in the cell. Another term used to describe this entire process is signal transduction.

2. Steroid hormones.

These are built up from cholesterol.

Examples include hormones such as: Cortisol, oestrogen and testosterone.

These hormones enter the cell and bind to Receptors inside target cells, in the cytoplasm or nucleus. The hormone and the receptor join to form a Hormone-Receptor complex. The hormone-receptor complex binds to promoter regions of a gene on the cell DNA. This can stimulate or sometimes inhibit transcription from those genes.