

# Hormones and Homeostasis

Name: \_\_\_\_\_

## **PART 1: HOMEOSTASIS**

**6.5.8 State that homeostasis involves maintaining the internal environment between limits, including blood pH, carbon dioxide concentration, blood glucose concentration, body temperature and water balance.**

Define homeostasis:

In humans, what are the typical homeostatic values of:

- Blood pH
  
- Carbon dioxide concentration
  
- Blood glucose concentration
  
- Body temperature

**6.5.9 Explain that homeostasis involves monitoring levels of variables and correcting changes in levels by negative feedback mechanisms.**

Define negative feedback:

Draw a diagram of an example negative feedback loop:

List three examples of homeostasis controlled through negative feedback:

- 
  
- 
  
-

**6.5.10 Explain the control of body temperature, including the transfer of heat in blood, and the roles of the hypothalamus, sweat glands, skin arterioles and shivering.**

How and why is heat transferred in the blood?

What is the function of the hypothalamus in temperature regulation?

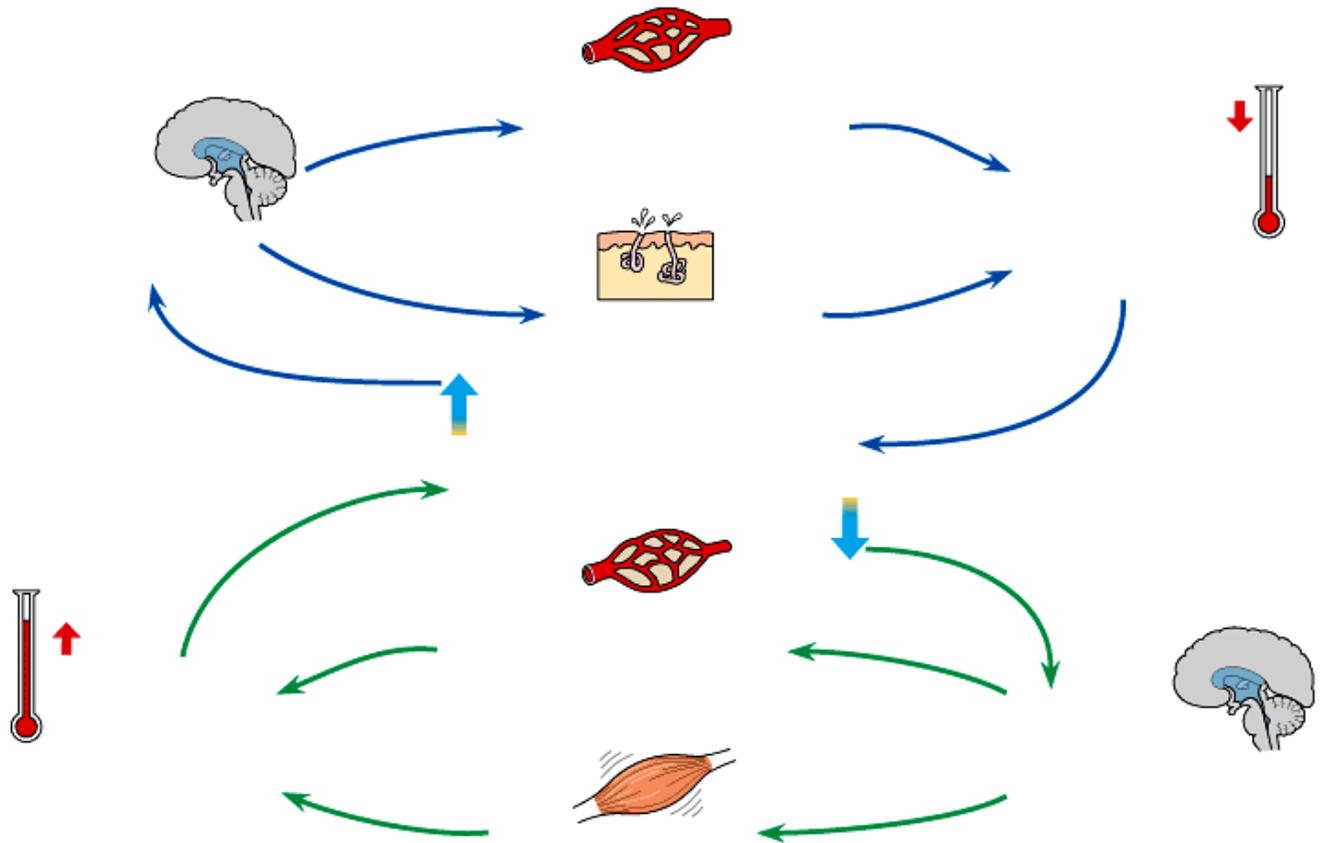
How do skin arterioles react to hot temperatures?

How do skin arterioles react to cold temperatures?

How does release of sweat from sweat glands regulate temperature?

What causes shivering?

What effect does shivering have on body temperature?



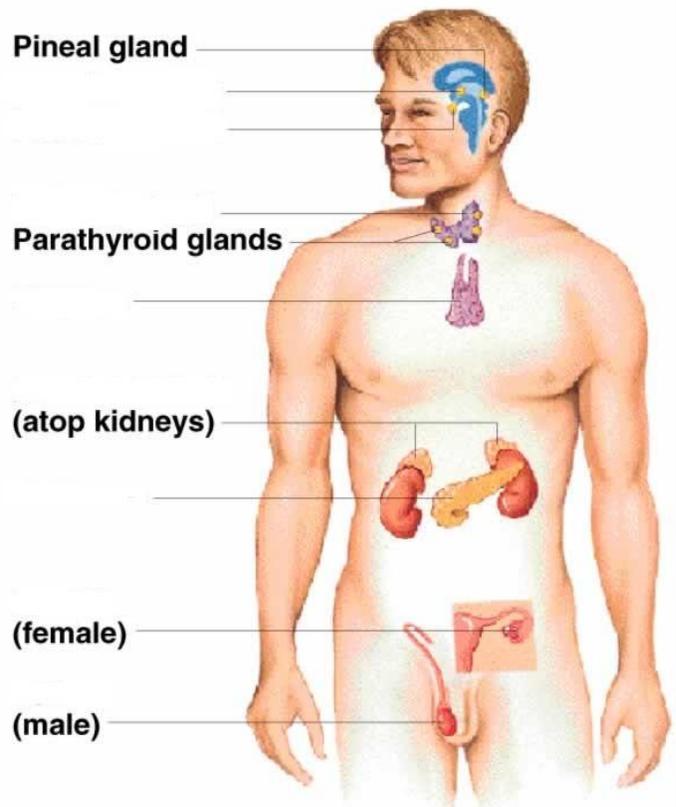
**PART 2: ENDOCRINE SYSTEM AND HORMONES**

6.5.7 State that the endocrine system consists of glands that release hormones that are transported in the blood.

Define gland:

How is an endocrine gland different than an exocrine gland?

Label the glands of the endocrine system shown:



**H.1.1 State that hormones are chemical messengers secreted by endocrine glands into the blood and transported to specific target cells.**

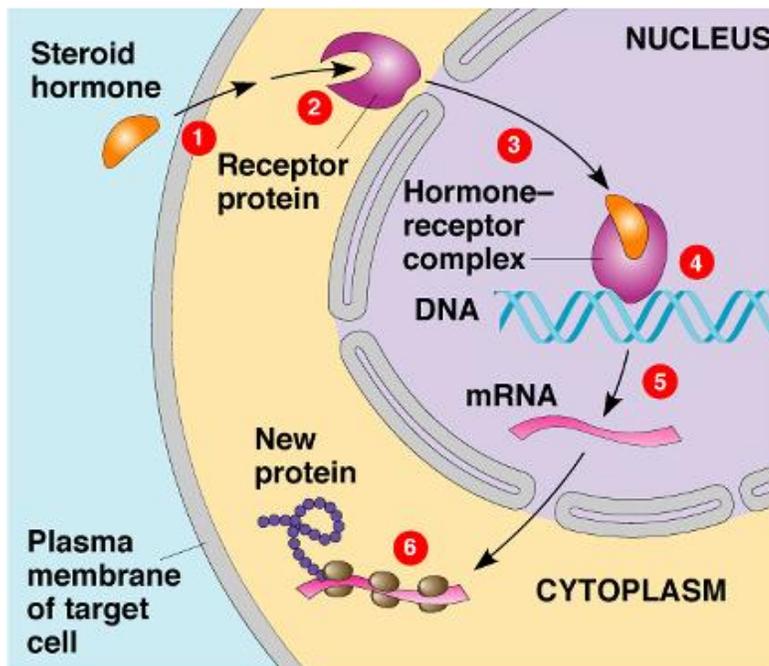
Define hormone:

**H.1.2 State that hormones can be steroids, proteins and tyrosine derivatives, with one example of each.**

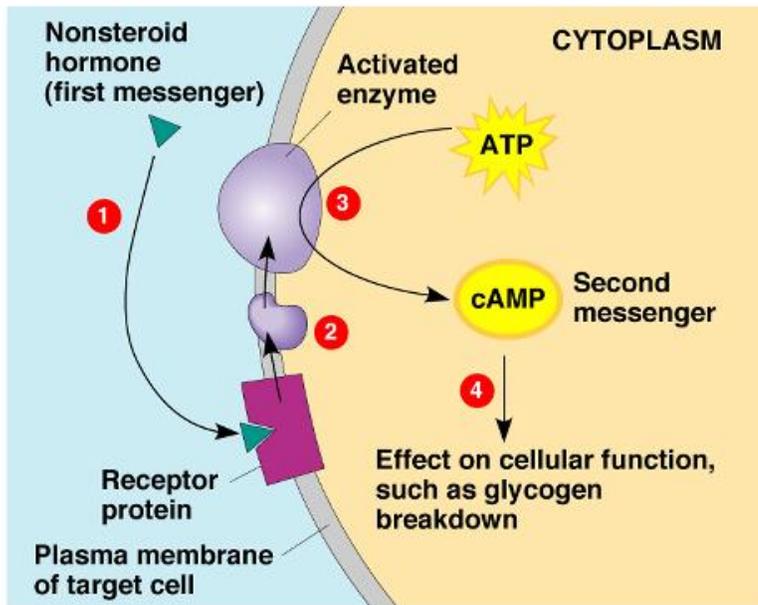
|            | STERIOD HORMONE | PROTEIN HORMONE | TYROSINE DERIVATIVE HORMONE |
|------------|-----------------|-----------------|-----------------------------|
| Structure  |                 |                 |                             |
| Example(s) |                 |                 |                             |

**H.1.3 Distinguish between the mode of action of steroid hormones and protein hormones.**

**Steroid Hormones:**



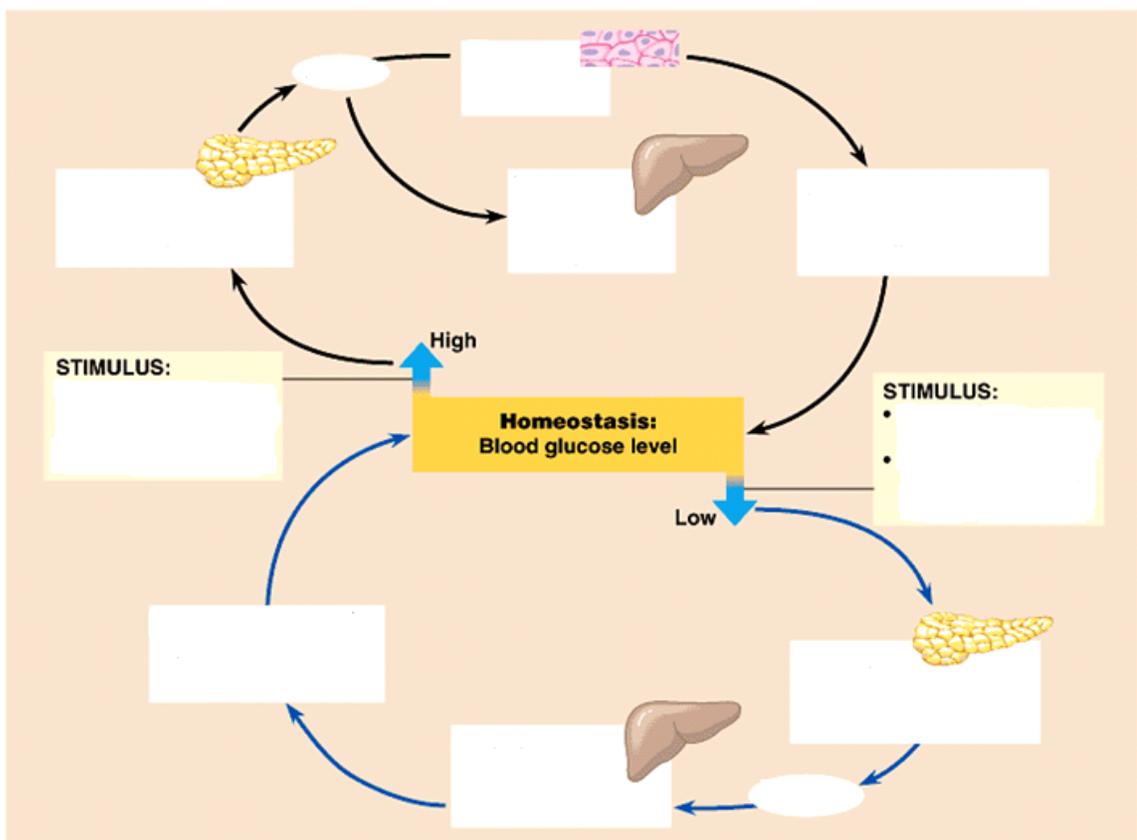
**Protein Hormones:**



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**6.5.11 Explain the control of blood glucose concentration, including the roles of glucagon, insulin and  $\alpha$  and  $\beta$  cells in the pancreatic islets.**

*Answer this assessment statement by writing two paragraphs, one about high blood glucose levels and one about low blood glucose levels. Use the following diagram for the basis of your writing.*



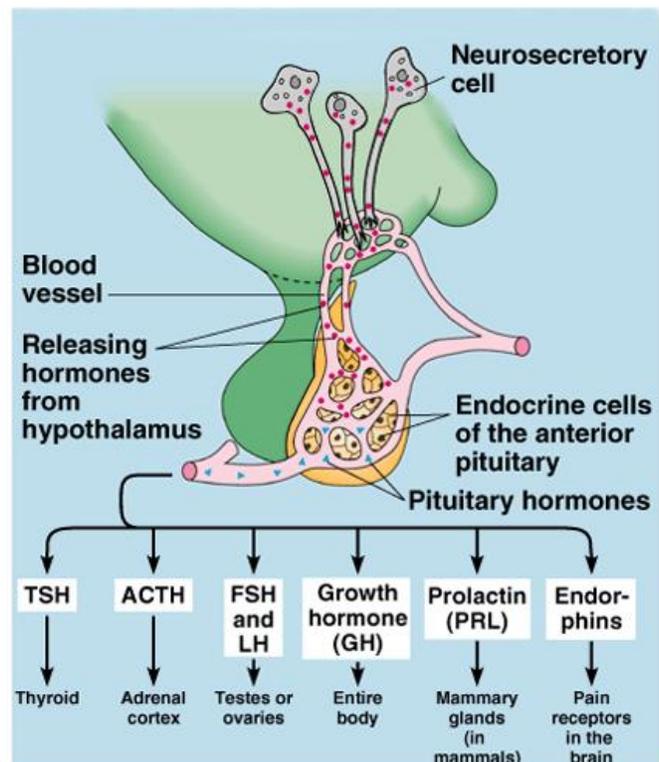
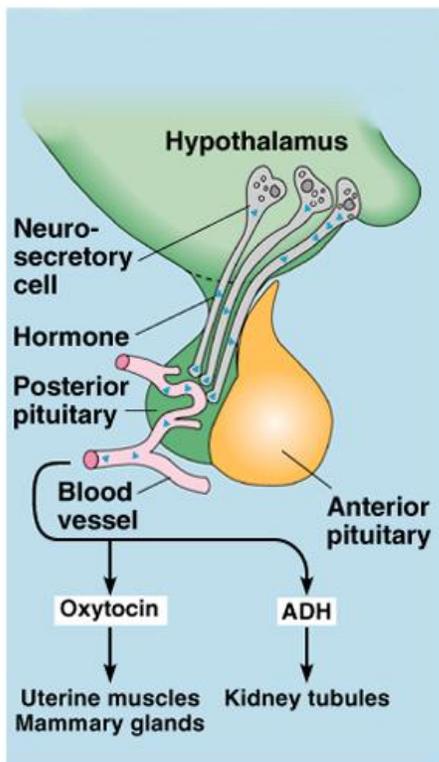
6.5.12 Distinguish between *type I* and *type II* diabetes.

|              | TYPE 1 DIABETES | TYPE 2 DIABETES |
|--------------|-----------------|-----------------|
| Cause        |                 |                 |
| Age of onset |                 |                 |
| Treatment    |                 |                 |

H.1.4 Outline the relationship between the hypothalamus and the pituitary gland

Where are these glands located in the body and in relation to each other?

In general, what is the function of hormones secreted by the hypothalamus that act on the pituitary gland (not specific to a certain hormone)?



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Using the diagram on the next page as a guide, summarize the functions of the hormones secreted by the hypothalamus and the pituitary.

