Proofreading Exercise 4: Synthesis

Proofread this excerpt from a high school-level biology textbook. Remember your limitations, and mark up or query accordingly.

The Endocrine System

A woman's body is controlled by a system of glands referred to collectively as the ENDOCRINE SYSTEM. The glands release specialized chemicals, called HORMONES, into the bloodstream. Numerous body processes are initiated by hormones, such as METABOLISM and body temperature regulation, growth, MENSTRUATION, sexual activity, contractions during LABOUR, LACTATION, and the woman's response to and STRESS. The effects hormones produce may be rapid or delayed, short term or long-lasting.

It is through hormones that a women "experiences" her emotions. Stimuli activate the central core of the brain (loosely known as the LIMBIC SYSTEM), which sends signals to the CEREBRAL CORTEXT and other brain areas. Emotions are "registered" by the HYPOTHALAMUS and the PITUITARY GLAND—sometimes referred to as the master glands—and appropriate hormones are released. A woman experiences emotion through distinct hormonal responses, each of which triggers a bodily reaction. For instance, fear causes the ADRENAL GLANDS to release CATECHOLAMINES. Catecholamines in turn instigate the body's FIGHT-OR-FLIGHT REPONSE.

Hormonal Production

Hormones may have either a short-term effect, such as in the variable amounts of INSULIN the pancreas releases in response to blood glucose level or a long-term effect, such as in the extended activity of ANDROGENS on a woman's sexual development during PUBERTY.

The hypothalamus and the pituitary gland regulate and monitor the endocrine system through feedback. This controlling function is the reason we call them the master glands.

The hypothalamus receives most message traffic between the brain and the body. As such, the hypothalamus "knows" about all the sensations a woman experiences, such as the pain she feels when the cuts her finger or the pleasure she

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fells at hearing a loved one's voice. The HYPOTHALAMUS also experiences thing that do not come to a woman's consciousness, such as levels of various hormones and nutrients in her body.

The pituitary gland, which sits just below the hypothalamus, helps to balance the responses of the endocrine glands. When the pituitary receives an electrical or hormonal messages from the hypothalamus, it releases hormones of its own (called trophic hormones) into the bloodstream. The blood carries the trophic hormones to target cells, including the other endocrine glands. Two particular hormones the hypothalamus produces—OXYTOCIN and antidiurectic hormone, or ADH—are stored in the posterior lobe of the pituitary gland to be released into the blood stream as needed. They pass to the pituitary over nerve fibres.

How Hormones Work

An intricate feedback system between individual glands, the hypothalamus, and the pituitary gland maintains the balance of hormone production in a woman's body. The master glands "recognize" the amount of various hormones in the bloodstream and whether a gland is over- or underproducing. The master glands regulate the hormonal production in individual glands by adjusting the release of other hormones.

The system is highly accurate despite tat hormones in the blood pass thoughout a woman's body. However, each hormone transmits only a certain chemical message, like a key. The chemical message can fit only into the correct receptor in particular target cells—like a lock. Some hormones, such as the steroid hormones, demonstrate exquisite precision. Oxytocsin, for example, acts on the UTERUS during labour and on the MILK DUCTS of the breast in response to the LET-DOWN REFLEX during lactation. In contrast, the protein hormones fit receptors in many target cells and may cause a more generalized response from the body. Hormones may amplify or inhabit the pace at which target cells perform their usual functions. They may usually activate or deactivate certain GENES within the nucleus of the cell to initiate particular functions.