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PHS 212 Assignment

### 10) Cyclic Changes in the vagina

In the course of the reproductive cycle, the vaginal epithelium is subject to normal cyclic changes that are influenced by estrogen. With increasing circulating levels of the hormone, there is proliferation of epithelial cells along with an increase in the number of cell layers. As cells proliferate and mature they undergo partial cornification. Although hormone induced changes occur in the other tissues and organs of the female reproductive system, the vaginal epithelium is more sensitive and its structure is an indicator of estrogen levels. The vaginal epithelium is divided into layers of cells, including the basal cells, the parabasal cells, the superficial squamous flat cells, and the intermediate cells. The superficial cells exfoliate continuously and basal cells replace the superficial cells that die and slough off from the stratum corneum. The cells of the vaginal epithelium retain a usually high level of glycogen compared to the other epithelial tissue in the body.

During the luteal and follicular phases of the estrous cycle the structure of the vaginal epithelium varies. The number of cell layers vary during the day of the estrous cycle:

Day 10 → 22 layers

Days 12-14 → 16 layers

Day 19 → 32 layers

Day 24 → 24 layers

The glycogen levels in the cells is at its highest immediately before ovulation.

## b) Cyclical changes in the breast

Each month women go through changes in the hormones that make up ~~them~~. Breast development, also known as mammogenesis, is a complex biological process in primates that takes place throughout a female's life. It occurs across several phases, including prenatal development, puberty, and pregnancy. At menopause, breast development ceases and the breasts atrophy. Breast development results in prominent and developed structures on the chest known as breasts in primates, which serves primarily as mammary glands. The process is mediated by an assortment of hormones (and growth factors), the most important of which include estrogen, progesterone, prolactin and growth hormone.

## 2. Hormonal Regulation of the ~~menstrual~~ menstrual cycle

The menstrual cycle is regulated by the luteinizing hormone (LH) and the follicle stimulating hormone (FSH) which are produced by the pituitary gland, promote ovulation and stimulate the ovaries to produce estrogen and progesterone. Estrogen and progesterone stimulate the uterus and breasts to prepare for possible fertilization.

The menstrual cycle is regulated ~~by~~ by the coordinated functions of the hypothalamus, pituitary, ovaries, and endometrium. The pulsatile secretion of gonadotropin-releasing hormone from the hypothalamus stimulates the anterior pituitary to secrete follicle-stimulating hormone (FSH) and luteinizing hormone (LH) which in turn stimulates the development of ovarian follicles and the production of ovarian steroids. A negative feedback mechanism is crucial for its control and regulation. During the follicular phase, the recruited follicle prepares for ovulation. After the LH surge and ovulation, the luteal phase begins. The follicular and luteal phases correspond to the proliferative and secretory phases of the endometrium, which develops during the proliferative phase and is maintained during the secretory phase to prepare for implantation of the fertilized embryo. The ~~endometrium~~ endometrium is shed during menstruation in the early follicular phase.