NAME: OLOGUN FRANCISCA OLAMIDE

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Briefly describe the cyclic changes in any two of the following:

* Breast

Each month, women go through changes in the hormones that make up the normal menstrual cycle. The hormone estrogen is produced by the ovaries in the first half of the menstrual cycle. It stimulates the growth of milk ducts in the breasts. The increasing level of estrogen leads to ovulation halfway through the cycle. Next, the hormone progesterone takes over in the second half of the cycle. It stimulates the formation of the milk glands. These hormones are believed to be responsible for the cyclical changes that many women feel in their breasts just before menstruation. These include swelling, pain, and soreness.

During menstruation, many women also have changes in breast texture. Their breasts may feel very lumpy. This is because the glands in the breast are enlarging to get ready for a possible pregnancy. If pregnancy does not happen, the breasts go back to normal size. Once menstruation starts, the cycle begins again.

* Cervix

The regional and cyclic changes in the murine genital epithelium were studied by transmission and scanning electron microscopy to provide a morphological standard to serve as a basis for investigation of host-parasite relationships in genital infections. Thus, we examined not only mucosal epithelial cell changes, but also surface mucus, normal flora and inflammatory cells. Ultrastructurally, at proestrus/estrus, we found uterine and most cervical epithelial cells covered with microvilli overlaid with mucus-like secretions and evidence of internal secretory activity. There was little normal flora anywhere in the tract. At early metestrus, we found squamous cervicovaginal epithelial cells with low discontinuous microrugae, extensive normal flora and many neutrophils beginning to migrate through the epithelium. The flora and neutrophils could explain the relative lack of susceptibility to infection at that time. At diestrus the appearance of a newly regenerated epithelium and lack of normal flora suggested that initiation of infection could occur at this stage; however, the presence of large numbers of neutrophils ready to phagocytize invading bacteria indicated a deterrent to infection. This study of cyclic changes in flora, mucus, neutrophils and epithelial cells provided ultrastructural evidence to support an earlier hypothesis that the greatest susceptibility to gonococcal infection in mice occurred at proestrus/estrus.

2. Explicate the following

* Menstrual cycle

**What's the menstrual cycle?**

The menstrual cycle is the monthly series of changes a woman's body goes through in preparation for the possibility of pregnancy. Each month, one of the ovaries releases an egg — a process called ovulation. At the same time, hormonal changes prepare the uterus for pregnancy. If ovulation takes place and the egg isn't fertilized, the lining of the uterus sheds through the vagina. This is a menstrual period.

The menstrual cycle, which is counted from the first day of one period to the first day of the next, isn't the same for every woman. Menstrual flow might occur every 21 to 35 days and last two to seven days. For the first few years after menstruation begins, long cycles are common. However, menstrual cycles tend to shorten and become more regular as you age.

Your menstrual cycle might be regular — about the same length every month — or somewhat irregular, and your period might be light or heavy, painful or pain-free, long or short, and still be considered normal. Within a broad range, "normal" is what's normal for you.

Keep in mind that use of certain types of contraception, such as extended-cycle birth control pills and intrauterine devices (IUDs), will alter your menstrual cycle. Talk to your health care provider about what to expect.

When you get close to menopause, your cycle might become irregular again. However, because the risk of uterine cancer increases as you age, discuss any irregular bleeding around menopause with your health care provider.

What is ovulation

Ovulation is when the ovary releases an egg so it can be fertilized by a sperm in order to make a baby. A woman is most likely to get pregnant if she has sex without birth control in the three days before and up to the day of ovulation (since the sperm are already in place and ready to fertilize the egg as soon as it is released). A man’s sperm can live for 3 to 5 days in a woman’s reproductive organs, but a woman’s egg lives for just 12 to 24 hours after ovulation.

Each woman’s cycle length may be different, and the time between ovulation and when the next period starts can be anywhere from one week (7 days) to more than 2 weeks (19 days).

At different times in a woman’s life, ovulation may or may not happen:

* Women who are [pregnant](https://www.womenshealth.gov/pregnancy/) do not ovulate.
* Women who are [breastfeeding](https://www.womenshealth.gov/breastfeeding/index.html) may or may not ovulate. Women who are breastfeeding should talk to their doctor about [birth control](https://www.womenshealth.gov/a-z-topics/birth-control-methods) methods if they do not want to get pregnant.
* During perimenopause, the transition to [menopause](https://www.womenshealth.gov/menopause/index.html), you may not ovulate every month.
* After menopause you do not ovulate.

**What causes menstrual cycle irregularities?**

Menstrual cycle irregularities can have many different causes, including:

* **Pregnancy or breast-feeding.** A missed period can be an early sign of pregnancy. Breast-feeding typically delays the return of menstruation after pregnancy.
* **Eating disorders, extreme weight loss or excessive exercising.** Eating disorders — such as anorexia nervosa — extreme weight loss and increased physical activity can disrupt menstruation.
* **Polycystic ovary syndrome (PCOS).** Women with this common endocrine system disorder may have irregular periods as well as enlarged ovaries that contain small collections of fluid — called follicles — located in each ovary as seen during an ultrasound exam.
* **Premature ovarian failure.** Premature ovarian failure refers to the loss of normal ovarian function before age 40. Women who have premature ovarian failure — also known as primary ovarian insufficiency — might have irregular or occasional periods for years.
* **Pelvic inflammatory disease (PID).** This infection of the reproductive organs can cause irregular menstrual bleeding.
* **Uterine fibroids.** Uterine fibroids are noncancerous growths of the uterus. They can cause heavy menstrual periods and prolonged menstrual periods.

For some women, use of birth control pills can help regulate menstrual cycles. Treatment for any underlying problems, such as an eating disorder, also might help. However, some menstrual irregularities can't be prevented.

In addition, consult your health care provider if:

* Your periods suddenly stop for more than 90 days — and you're not pregnant
* Your periods become erratic after having been regular
* You bleed for more than seven days
* You bleed more heavily than usual or soak through more than one pad or tampon every hour or two
* Your periods are less than 21 days or more than 35 days apart
* You bleed between periods
* You develop severe pain during your period
* You suddenly get a fever and feel sick after using tampons

To find out what's normal for you, start keeping a record of your menstrual cycle on a calendar. Begin by tracking your start date every month for several months in a row to identify the regularity of your periods.

If you're concerned about your periods, then also make note of the following every month:

* **End date.** How long does your period typically last? Is it longer or shorter than usual?
* **Flow.** Record the heaviness of your flow. Does it seem lighter or heavier than usual? How often do you need to change your sanitary protection? Have you passed any blood clots?
* **Abnormal bleeding.** Are you bleeding in between periods?
* **Pain.** Describe any pain associated with your period. Does the pain feel worse than usual?
* **Other changes.** Have you experienced any changes in mood or behavior? Did anything new happen around the time of change in your periods?