

Introduction

LH and FSH can be categorized as pituitary hormones because they are produced by the pituitary gland. Similarly, progesterone and estrogen are known as ovarian hormones because they are produced in the ovaries. In this investigation, you will analyze diagrams to interpret how the levels of pituitary and ovarian hormones affect, and are affected by, ovarian and uterine events during the menstrual cycle.

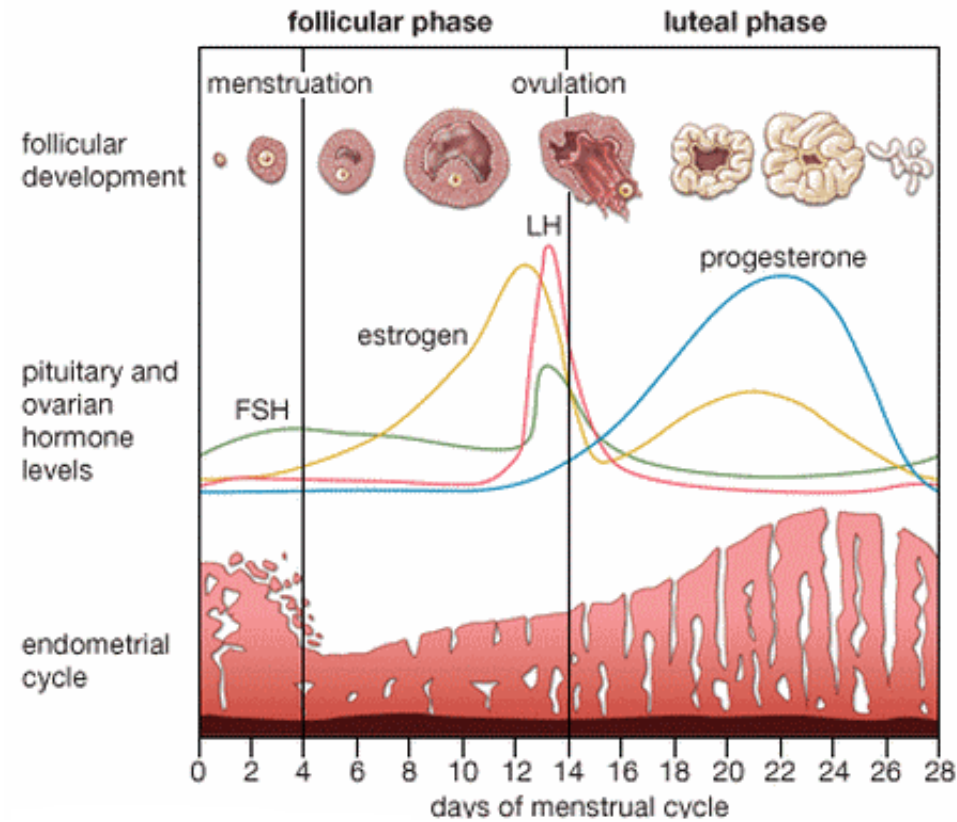
Follicle Stimulating Hormone (FSH): Stimulates the follicle, which contains the egg, to grow. It is produced by the anterior pituitary gland.

Luteinizing Hormone (LH) - Causes ovulation (release of the egg). It is produced by the anterior pituitary gland.

Estrogen – stimulates the development of secondary sex characteristics (breasts growth, etc). Estrogen is produced in the ovaries. Also involved in developing the endometrium.

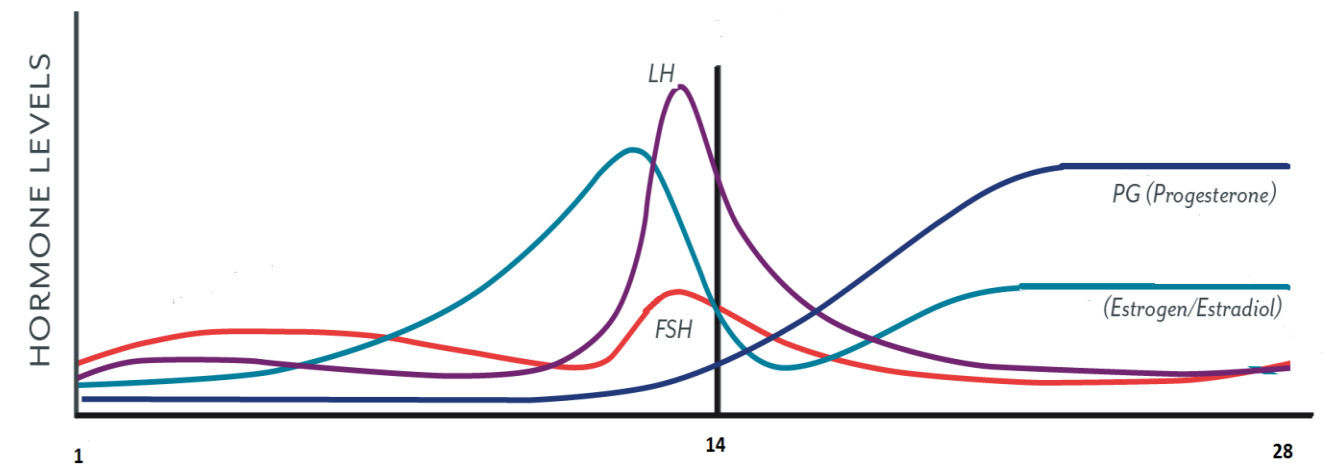
Progesterone – important in the menstrual cycle and in maintaining the early stages of pregnancy. It maintains the thickness of the endometrium. It is secreted by the corpus luteum in the ovary. It is called the “hormone of pregnancy”

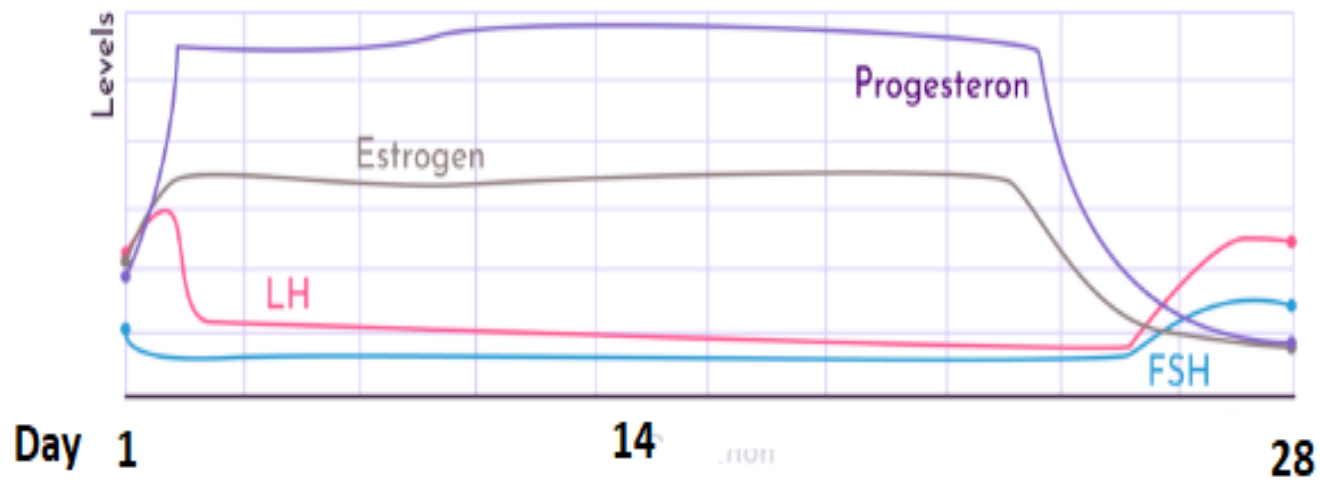
The menstrual cycle



- 1.) During which days of the menstrual is FSH the highest?
A) 5-11 B) 26-28 C) 12-14 D) 0-4
- 2.) During Menstruation, days 0-5, what is happening to the follicular development?
A) The follicle is maturing in preparation for release of egg
B) The follicle has released the egg and is releasing high levels of progesterone
C) The follicle is shrinking
D) The follicle is releasing high levels of estrogen
- 3.) On which day is the level of LH in the bloodstream at its highest?
A) 5 B) 10 C) 13 D) 20
- 4.) What event occurs after the levels of LH peaks in the bloodstream?
A) Ovulation B) FSH keeps increasing C) Menstruation D) Follicular phase
- 5.) What happens during the luteal phase?
A) The corpus luteum begins to break down and progesterone levels drop
B) The corpus luteum begins to develop and secrete FSH
C) The corpus luteum begins to break down and estrogen levels drop
D) The corpus luteum begins to develop and progesterone increases
- 6.) During which days of the cycle does the levels of estrogen increase the fastest?
A) 22-28 B) 7-12 C) 0-4 D) 15-20

- 7.) What is happening to the endometrium from days 4-12
A) It is being shed B) It is slowly thickening C) It is getting thinner D) It is very thick
- 8.) During which days of the cycle does the level of progesterone increase significantly?
A) 4-12 B) 7-16 C) 9-17 D) 15-21
- 9.) During which days of the cycle are the levels of estrogen and progesterone the lowest?
A) 1-3 B) 5-9 C) 13-21 D) 22-28
- 10.) What is happening to the endometrium on days 1-3?
A) It is being shed B) It is thickening C) It is getting thicker D) Nothing is happening
- 11.) What is the biology term used to describe the period?
A) Ovulation B) Menstruation C) Luteal Phase D) FSH release phase
- 12.) Which hormones levels are at their highest in the blood when the uterine lining is the thickest?
A) Estrogen and FSH B) LH and FSH C) Estrogen and Progesterone D) LH and Estrogen
- 13.) What happens to the levels of FSH as Estrogen and Progesterone levels increase during the luteal phase?
A) Estrogen and Progesterone increase production of FSH
B) Estrogen and progesterone do not affect FSH levels
C) Estrogen and Progesterone cause FSH levels to become low/stable
D) Estrogen and Progesterone levels cause FSH levels to fluctuate up and down
- 14.) What does FSH stand for and what is its function?
A) Follicle Stimulating Hormone – It stimulates the follicle to mature
B) Follicle Stimulating Hormone – It causes the release of the egg during ovulation
C) Fetus Somatic Hormone – It causes the developing embryo to develop in to a fetus
D) Fetus Somatic Hormone – it causes the fetus to start producing progesterone
- 15.) What does LH stand for and what is its function?
A) Luteinizing Hormone – causes the follicle to be re-absorbed by the body for future use
B) Luteinizing Hormone – causes the release of the follicle and development of the corpus luteum
C) Local Hormone – a hormone that is involved in the re-absorption of an unused follicle
D) Local Hormone – a hormone that causes the follicle to rupture and the breakdown of the corpus luteum
- 16.) What is true about progesterone and estrogen?
A) They both prepare and maintain the uterine lining for the possible implantation of the embryo
B) High levels of both cause the endometrium to be shed during menstruation
C) They are both very high during the follicular stage
D) During the luteal stage estrogen levels are higher than progesterone levels
- 17.) How do you know that the woman with the hormone levels in the above diagram is using birth control? (1 Mark)





Graph A: Hormones From Pituitary Gland

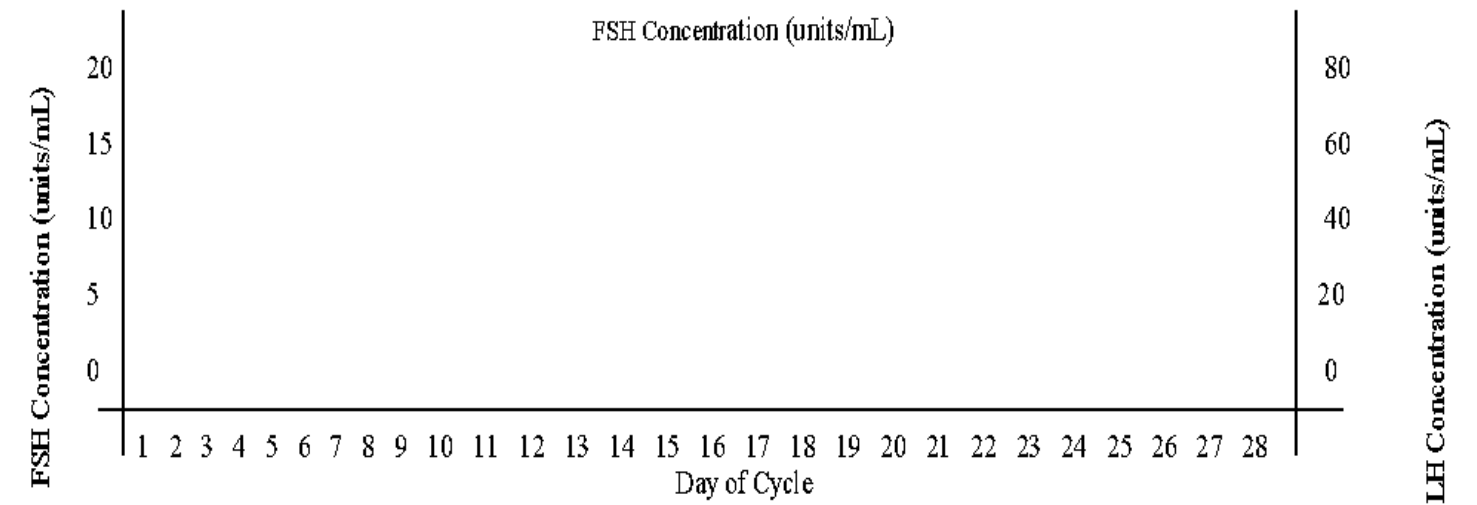
18.) How do you know that the woman with the hormone levels in the above diagram is pregnant? (1 Mark)

19.) Graph the following data on the tables provided on the right of this page. (2 Marks)

Concentration of Hormones in Blood: Follicular Phase

Day	FSH	Estrogen	LH	Progesterone
1	9	30	9	0.6
2	11	40	12	0.8
3	13	50	16	1.0
4	14	70	18	1.0
5	15	80	19	1.0
6	14	100	16	1.0
7	14	130	12	1.2
8	15	140	19	1.2
9	13	180	15	1.3
10	11	200	16	1.5
11	9	220	20	1.5
12	18	230	30	1.6
13	13	220	75	1.8
14	9	200	58	2.0
15	9	180	30	2.3
16	8	150	14	3.7
17	8	120	10	5.8
18	8	100	9	8.3
19	8	50	7	10.4
20	7	30	5	12.0
21	7	25	3	12.0
22	6	25	3	11.8
23	5	25	2	10.3
24	5	25	3	7.2
25	6	20	3	4.0
26	7	20	4	3.0
27	7	25	5	1.5
28	8	25	7	0.8

Concentration of Hormones in Blood: Luteal Phase



Graph B: Sex Hormones from Ovary

