

**HST071: Human Reproductive Biology**  
**Homework 2**  
**Female Reproduction**

1. Prolactin increases \_\_\_\_\_ synthesis and secretion from the hypothalamus. Dopamine and dopamine agonists such as \_\_\_\_\_ subsequently inhibits \_\_\_\_\_ secretion. In females, prolactin inhibits \_\_\_\_\_ synthesis and release, which inhibits \_\_\_\_\_.
2. List the following hormones in order of decreasing potency: estriol, estradiol, estrone.
3. Unopposed estrogen therapy leads to an increased risk of \_\_\_\_\_ cancer. Use of \_\_\_\_\_ with estrogen decreases this risk.
4. Estrogen is important for endometrial \_\_\_\_\_ during the follicular phase. Progesterone maintains \_\_\_\_\_ activity of the uterus during the luteal phase.
5. \_\_\_\_\_ stimulates theca cells to produce \_\_\_\_\_, which diffuses to nearby \_\_\_\_\_ cells. There, it is converted to \_\_\_\_\_ by aromatase. This step is stimulated by \_\_\_\_\_.
6. Ovulation occurs \_\_\_\_\_ days before menstruation, *regardless* of cycle length. Ovulation occurs as a result of \_\_\_\_\_-induced \_\_\_\_\_ surge.
7. During the luteal phase, basal body temperature (increases/decreases) due to the effect of \_\_\_\_\_ on the \_\_\_\_\_ thermoregulatory center.
8. If fertilization occurs, the corpus luteum is rescued from regression by \_\_\_\_\_ which is produced by the \_\_\_\_\_.
9. The fetal \_\_\_\_\_ gland synthesizes dehydroepiandrosterone-sulfate (DHEA-S), which is hydroxylated in the fetal \_\_\_\_\_. The intermediates are transferred to the \_\_\_\_\_, where enzymes remove sulfate and aromatize to estrogens.
10. Although prolactin levels increase steadily during pregnancy (stimulated by the hormone \_\_\_\_\_), lactation does not occur during pregnancy because \_\_\_\_\_ and \_\_\_\_\_ block the action of prolactin on the breast.
11. Menopause is characterized by the cessation of \_\_\_\_\_ production with age-linked decline in the number of ovarian \_\_\_\_\_.
12. The most common microbial cause of mastitis is \_\_\_\_\_.
13. Which of these substances decreases the number and density of gap junctions
  - (A) connexin-43
  - (B) oxytocin
  - (C) estrogen
  - (D) progesterone
  - (E) prolactin
14. Oxytocin receptors are found in the highest concentrations in the
  - (A) cervix
  - (B) fundus

- (C) lower segment of the uterus
- (D) vagina
- (E) fundus and cervix

15. Which of the following explains the suppression of lactation during pregnancy?
- (A) Blood prolactin levels are too low for milk production to occur
  - (B) Human placental lactogen levels are too low for milk production to occur
  - (C) The fetal adrenal gland does not produce sufficient estriol
  - (D) Blood levels of estrogen and progesterone are high
  - (E) The maternal anterior pituitary is suppressed
16. The source of estrogen during the second and third trimesters of pregnancy is the
- (A) corpus luteum
  - (B) maternal ovaries
  - (C) fetal ovaries
  - (D) placenta
  - (E) maternal ovaries and fetal adrenal gland
  - (F) maternal adrenal gland and fetal liver
  - (G) fetal adrenal gland, fetal liver, and placenta
17. Secretion of oxytocin is increased by
- (A) milk ejection
  - (B) dilation of the cervix
  - (C) increased prolactin levels
  - (D) increased serum osmolarity
18. Secondary amenorrhea refers to the absence of menses for \_\_\_\_\_ months in a woman who previously had menses. The most common cause is \_\_\_\_\_, so a serum \_\_\_\_\_ assay is always the first step in an evaluation.
19. Secondary amenorrhea can be classified pathophysiologically as follows:
- Hypothalamic/pituitary disorders, characterized by (increased/decreased/normal) FSH and LH. These include primary and functional gonadotropism deficiencies.
  - Ovarian disorders, characterized by (increased/decreased/normal) FSH and LH.
  - End-organ disease, characterized by (increased/decreased/normal) FSH and LH
20. In addition to gonadotropin levels, a progesterone challenge is an excellent test to perform in the initial evaluation of these patients. Withdrawal bleeding indicates that the endometrial mucosa must have been primed with \_\_\_\_\_, so the \_\_\_\_\_ axis and ovaries must be normal. It also rules out an end-organ defect.

Match the following clinical descriptions of women with secondary amenorrhea with the most likely laboratory findings.

	Serum FSH	Serum LH	Bleeding following Progesterone administration
(A)	Normal	Normal	No
(B)	Increased	Increased	No
(C)	Normal	Normal	Yes
(D)	Decreased	Decreased	No
(E)	Decreased	Increased	Yes

21. \_\_\_\_\_ A 35-year-old woman with a history of numerous dilation and curettage procedures for menorrhagia. (For extra credit, this woman likely has \_\_\_\_\_ syndrome).
22. \_\_\_\_\_ A 24-year-old woman with anorexia nervosa.
23. \_\_\_\_\_ A 42-year-old woman whose ovaries have been surgically removed; hormone replacement has not been initiated.