

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Chapter 46: Animal Reproduction Part II

### Concept 46.5 The interplay of tropic and sex hormones regulates mammalian reproduction

In Chapter 45 you studied hormones, and now we are going to take a careful look at the hormones that control reproduction. While many students find this topic difficult, it will enable you to have a college-level understanding of human reproduction and therefore is important to master. Let's attack it systematically.

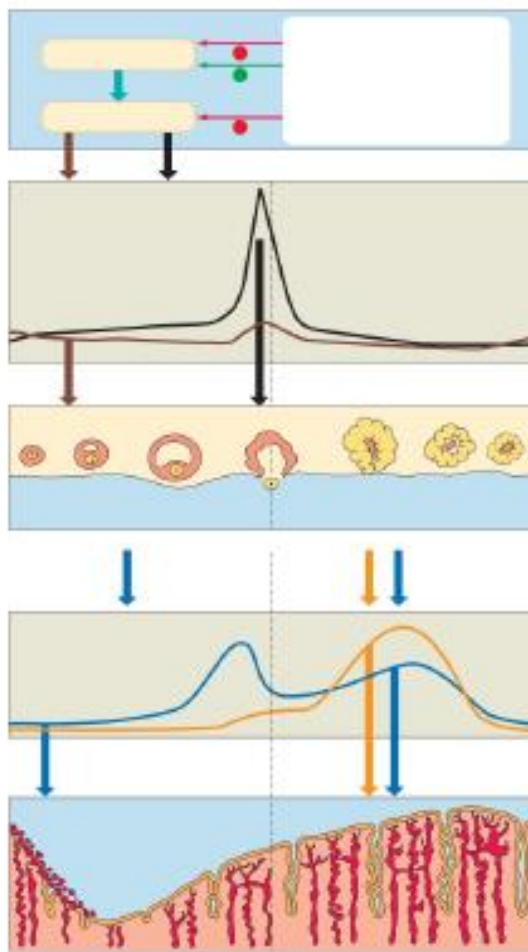
1. In males the hypothalamus secretes \_\_\_\_\_, which causes the anterior pituitary to produce two hormones, \_\_\_\_\_ and \_\_\_\_\_.  
These are trophic hormones, and their target tissues are in the ovaries and testes. They will regulate gametogenesis, as well as cause the production of \_\_\_\_\_ in the testes and \_\_\_\_\_ in the ovaries. (All blanks in this question should be filled with the name of a hormone.)
2. What is the role of *FSH* in males?
3. What is the role of *LH* in males?
4. What is *menstruation*?

The female reproduction cycle involves changes in the uterus, and events in the ovaries, so we will need to look at both of these at once: the *ovarian cycle* and the *menstrual (uterine) cycle*. Since the control of menstruation is under hormonal control, we will begin at the hypothalamus.

5. In females the hypothalamus secretes \_\_\_\_\_, which causes the anterior pituitary to produce two hormones, \_\_\_\_\_ and \_\_\_\_\_.  
These are trophic hormones. The target of FSH is the ovarian follicles, and as FSH levels increase, follicles grow and oocytes mature.
6. FSH and LH get their names from events of the female reproductive cycle, but they also function in males. How are their functions in females and males similar?

7. Study Figure 46.14 carefully. There are two ovarian hormones: *estradiol* and *progesterone*. What hormone does the maturing follicle produce?
  
8. What does the LH surge trigger?
  
9. After ovulation, the follicle is transformed into a *corpus luteum*. What hormones does the *corpus luteum* produce?
  
10. How do high levels of progesterone and estradiol affect the uterine lining (*endometrium*)?
  
11. If fertilization does not occur, the corpus luteum disintegrates and the levels of both progesterone and estradiol drop. How do low levels of progesterone and estradiol affect the uterine lining?
  
12. Describe what occurs in each of these phases of the ovarian cycle:
  - follicular phase**
  
  - luteal phase**
  
  - proliferative phase**
  
  - secretory phase**
  
  - menstrual flow phase**
  
13. By convention, what occurs on *day 1* of the menstrual cycle?

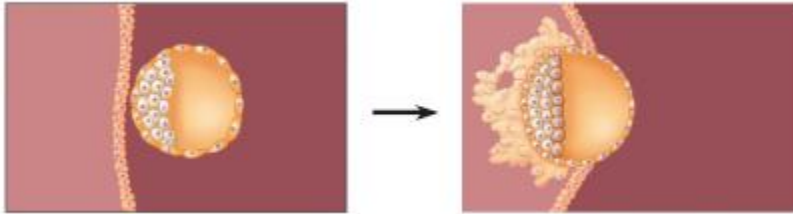
14. Can you put all this together? See how much of this figure you can now explain, and then refer to your text to complete the parts you need more help to answer.



**Concept 46.6 In placental mammals, an embryo develops fully within the mother's uterus**

15. What is the role of *HCG*? Is it produced by the embryo or by the mother?
16. How does a pregnancy test work?
17. The early embryo is called a *blastocyst*. What is the outer layer of the blastocyst called?

18. On the figure below, label *blastocyst*, *trophoblast*, and *inner cell mass*.



19. The *inner cell mass* will become the embryo. What will the *trophoblast* form?

20. What marks the transition from an *embryo* to a *fetus*? When does this occur?

21. What hormone stimulates uterine contractions?

22. Explain how each of these hormonal contraceptives prevents pregnancy, based on your understanding of the menstrual cycle.

a. birth control pills/hormone skin patch or injection

b. progestin

23. Hormone-based contraceptives typically have pregnancy rates of 1% or less. What are their negative side effects?

24. In what ways are tubal ligation and vasectomy similar?