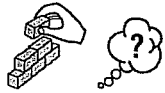


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Activity 46.1 How does the production of male and female gametes differ in humans?

This activity is designed to help you understand how gamete production is controlled in mammals and particularly in humans.

In human males and females, the production of gametes and the hormones estrogen, progesterone, and testosterone is ultimately controlled by actions of the hypothalamus.

Using all the terms below, diagram the control of gamete and sex hormone production first in a human male and then in a human female. Be sure to explain the role(s) of each term in your diagram.

hypothalamus

anterior pituitary

LH

FSH

ovary or testes

follicle or seminiferous tubule

corpus luteum or Leydig cells

progesterone

estrogen or testosterone

secondary sex characteristics

primary sex characteristics

negative feedback

egg and polar bodies or sperm

Human male:

Human female:

Use your diagrams to answer the questions.

1. In both males and females, the hypothalamus produces GnRH, which stimulates the pituitary to release LH and FSH. Fill in the chart.

Hormone	a. In males causes:	b. In females causes:
LH		
FSH		

2. In both males and females, the testes or ovaries produce additional hormones.

	a) Males produce:	b) Females produce
Hormones		
Function of these hormones produced in the gonads		

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3. Most birth control methods are designed to keep the egg and sperm from uniting to form a zygote. Many birth control pills or patches used by human females contain a combination of estrogen and progesterone. How do they keep sperm from uniting with egg? Explain the mechanism.

4. Efforts to make a male contraceptive pill (analogous to the pills used by females) have not been very successful. Given what you know about the similarities and differences in male and female gamete production, propose why this might be the case?

5. Fertilization generally occurs in the upper third of the oviduct, and development of the fetus occurs in the uterus. In some relatively rare cases, however, developing embryos have attached to the outside of the uterus and developed there for the full nine months of pregnancy.

a. Given the anatomy of the female reproductive system, can you explain how this could happen?

b. What modifications of normal birthing procedures (if any) would have to be made in such cases?