

The Reproductive Systems

The reproductive system consists of those organs that participate in perpetuating the species. It is a unique body system in that its organs differ between the two sexes and yet they work toward the same goal: creating a new being. Of interest also is the fact that this system is the only one not necessary to the survival of the individual, and yet survival of the species depends on its proper functioning. The male reproductive system is divided into the external genitals, the testes, the duct system, and the accessory glands. The testes, or gonads, are considered essential organs because they produce the sex cells, sperm, that join with the female sex cells, ova, to form a new human being. They also secrete the male sex hormone, testosterone, which is responsible for the physical transformation of a boy into a man.

Sperm are formed in the testes by the seminiferous tubules. From there they enter a long, narrow duct, the epididymis. They continue onward through the vas deferens into the ejaculatory duct, down the urethra, and out of the body. Throughout this journey, various glands secrete substances that add motility to the sperm and create a chemical environment that is conducive to reproduction.

The female reproductive system is truly extraordinary and diverse. It produces ova, receives the penis and sperm during intercourse, serves as the site of conception, houses and feeds the embryo during prenatal development, and nourishes the infant after birth.

Because of its diversity, the physiology of the female is generally considered to be more complex than that of the male. Much of the activity of this system revolves around the menstrual cycle and the monthly preparation that the female undergoes for a possible pregnancy.

The organs of the female system are divided into essential organs and accessory organs of reproduction. The essential organs of the female are the ovaries. Just as with the male, the essential organs of the female are referred to as the gonads. The gonads of both sexes produce the sex cells. In the male, the gonads produce the sperm and in the female they produce the ova. The gonads are also responsible for producing the hormones in each sex necessary for the appearance of the secondary sex characteristics.

The menstrual cycle of the female typically covers a period of 28 days. Each cycle consists of three phases: the menstrual period, the postmenstrual phase, and the premenstrual phase. Changes in the blood levels of the hormones that are responsible for the menstrual cycle also cause physical and emotional changes in the female. A knowledge of these phenomena and this system, in both the male and the female, are necessary to complete your understanding of the reproductive system.

TOPICS FOR REVIEW

Before progressing to Chapter 20, you should familiarize yourself with the structure and function of the organs of the male and female reproductive systems. Your review should include emphasis on the gross and microscopic structure of the testes and the production of sperm and testosterone. Your study should continue by tracing the pathway of a sperm cell from formation to expulsion from the body.

You should then familiarize yourself with the structure and function of the organs of the female reproductive system. Your review should include emphasis on the development of a mature ovum from ovarian follicles and should also concentrate on the phases and occurrences in a typical 28-day menstrual cycle.

MALE REPRODUCTIVE SYSTEM STRUCTURAL PLAN

Match the term on the left with the proper selection on the right.

Group A

- _____ 1. Testes
- _____ 2. Spermatozoa
- _____ 3. Ova
- _____ 4. Penis
- _____ 5. Zygote

- A. Fertilized ovum
- B. Accessory organ
- C. Male sex cell
- D. Gonads
- E. Gamete

Group B

- _____ 6. Testes
- _____ 7. Bulbourethral
- _____ 8. Asexual
- _____ 9. External genitalia
- _____ 10. Prostate

- A. Cowper's gland
- B. Scrotum
- C. Essential organ
- D. Single parent
- E. Accessory organ



If you have had difficulty with this section, review pages 453-454.

TESTES

Circle the correct answer.

11. The testes are surrounded by a tough membrane called the:
 - A. Ductus deferens
 - B. Tunica albuginea
 - C. Septum
 - D. Seminiferous membrane
12. The _____ lie near the septa that separate the lobules.
 - A. Ductus deferens
 - B. Sperm
 - C. Interstitial cells
 - D. Nerves

13. Sperm are found in the walls of the:
 - A. Seminiferous tubule
 - B. Interstitial cells
 - C. Septum
 - D. Blood vessels
14. An undescended testicle is called a(n):
 - A. Orchidalgia
 - B. Orchidorrhaphy
 - C. Orchichorea
 - D. Cryptorchidism
15. The structure(s) that produce(s) testosterone is(are) the:
 - A. Seminiferous tubules
 - B. Prostate gland
 - C. Bulbourethral gland
 - D. Pituitary gland
 - E. Interstitial cells
16. The part of the sperm that contains genetic information that will be inherited is the:
 - A. Tail
 - B. Neck
 - C. Middle piece
 - D. Head
 - E. Acrosome
17. Which one of the following is *not* a function of testosterone?
 - A. It causes a deepening of the voice.
 - B. It promotes the development of the male accessory glands.
 - C. It has a stimulatory effect on protein catabolism.
 - D. It causes greater muscular development and strength.
18. Sperm production is called:
 - A. Spermatogonia
 - B. Spermatids
 - C. Spermatogenesis
 - D. Spermatocyte
19. The section of the sperm that contains enzymes that enable it to break down the covering of the ovum and permit entry should contact occur is the:
 - A. Acrosome
 - B. Midpiece
 - C. Tail
 - D. Stem
20. Descent of the testes usually occurs about:
 - A. Two months after birth
 - B. Two months before birth
 - C. Two months after conception
 - D. Two years after birth
 - E. None of the above

Fill in the blanks.

The (21) _____ are the gonads of the male. From puberty on, the seminiferous tubules are continuously forming (22) _____. Any of these cells may join with the female sex cell, the (23) _____, to become a new human being.

Another function of the testes is to secrete the male hormone (24) _____, which transforms a boy to a man. This hormone is secreted by the (25) _____ of the testes. A good way to remember testosterone's functions is to think of it as "the (26) _____ hormone" and "the (27) _____ hormone."



If you have had difficulty with this section, review pages 455-459.

REPRODUCTIVE DUCTS ACCESSORY OR SUPPORTIVE SEX GLANDS EXTERNAL GENITALIA

Choose the correct term and write the letter in the space next to the appropriate definition below.

- | | |
|---------------------|-------------------|
| A. Epididymis | F. Prostate gland |
| B. Vas deferens | G. Cowper's gland |
| C. Ejaculatory duct | H. Prostatectomy |
| D. Prepuce | I. Semen |
| E. Seminal vesicles | J. Scrotum |

- _____ 28. Continuation of ducts that start in epididymis
- _____ 29. Procedure performed for benign prostatic hypertrophy
- _____ 30. Also known as "bulbourethral"
- _____ 31. Narrow tube that lies along the top of and behind the testes
- _____ 32. Doughnut-shaped gland beneath bladder
- _____ 33. Continuation of vas deferens
- _____ 34. Mixture of sperm and secretions of accessory sex glands
- _____ 35. Contributes 60% of the seminal fluid volume
- _____ 36. Removed during circumcision
- _____ 37. External genitalia



If you have had difficulty with this section, review pages 460-462.

FEMALE REPRODUCTIVE SYSTEM STRUCTURAL PLAN

Match the term on the left with the proper selection on the right.

- | | |
|---------------------|------------------------|
| _____ 38. Ovaries | A. Genitals |
| _____ 39. Vagina | B. Accessory sex gland |
| _____ 40. Bartholin | C. Accessory duct |
| _____ 41. Vulva | D. Gonads |
| _____ 42. Ova | E. Sex cells |

Select the correct term from the options given and write the letter in the answer blank.

- | | | |
|-------------------------|-----------------------|-----------------------|
| _____ 43. Mons pubis | A. External structure | B. Internal structure |
| _____ 44. Vagina | | |
| _____ 45. Labia majora | | |
| _____ 46. Uterine tubes | | |
| _____ 47. Vestibule | | |
| _____ 48. Clitoris | | |
| _____ 49. Labia minora | | |
| _____ 50. Ovaries | | |



If you have had difficulty with this section, review pages 462-467.

OVARIES

Fill in the blanks.

The ovaries are the (51) _____ of the female. They have two main functions. The first is the production of the female sex cell. This process is called (52) _____. The specialized type of cell division that occurs during sexual cell reproduction is known as (53) _____. The ovum is the body's largest cell and has (54) _____ the number of chromosomes found in other body cells. At the time of (55) _____, the sex cells from both parents fuse and (56) _____ chromosomes are united.

The second major function of the ovaries is to secrete the sex hormones (57) _____ and (58) _____. Estrogen is the sex hormone that causes the development and maintenance of the female (59) _____. Progesterone acts with estrogen to help initiate the (60) _____ in girls entering (61) _____.



If you have had difficulty with this section, review pages 462-465.

FEMALE REPRODUCTIVE DUCTS

Select the correct term from the options given and write the letter in the answer blank.

- A. Uterine tubes B. Uterus C. Vagina

- _____ 62. Ectopic pregnancy
_____ 63. Lining known as endometrium
_____ 64. Terminal end of birth canal
_____ 65. Site of menstruation
_____ 66. Approximately 4 inches in length
_____ 67. Consists of body, fundus, and cervix
_____ 68. Site of fertilization
_____ 69. Also known as "oviduct"
_____ 70. Entrance way for sperm
_____ 71. Total hysterectomy



If you have had difficulty with this section, review pages 465-471.

ACCESSORY OR SUPPORTIVE SEX GLANDS EXTERNAL GENITALS OF THE FEMALE

Match the term on the left with the proper selection on the right.

Group A

- | | |
|-----------------------------|--|
| _____ 72. Bartholin's gland | A. Colored area around nipple |
| _____ 73. Breasts | B. Grape-like clusters of milk-secreting cells |
| _____ 74. Alveoli | C. Drain alveoli |
| _____ 75. Lactiferous ducts | D. Secretes lubricating fluid |
| _____ 76. Areola | E. Primarily fat tissue |

Group B

- | | |
|------------------------|--|
| _____ 77. Mons pubis | A. "Large lips" |
| _____ 78. Labia majora | B. Area between labia minora |
| _____ 79. Clitoris | C. Surgical procedure |
| _____ 80. Vestibule | D. Composed of erectile tissue |
| _____ 81. Episiotomy | E. Pad of fat over the symphysis pubis |



If you have had difficulty with this section, review pages 466-468.

MENSTRUAL CYCLE

If the statement is true, write "T" in the answer blank. If the statement is false, correct the statement by circling the incorrect term and writing the correct term in the answer blank.

- _____ 82. "Climacteric" is the scientific name for the beginning of the menses.
_____ 83. As a general rule, several ovum mature each month during the 30 to 40 years that a woman has menstrual periods.

- _____ 84. Ovulation occurs 28 days before the next menstrual period begins.
_____ 85. The first day of ovulation is considered the first day of the cycle.
_____ 86. A woman's fertile period lasts only a few days out of each month.
_____ 87. The control of the menstrual cycle lies in the posterior pituitary gland.

Write the letter of the correct hormone in the blank next to the appropriate description.

A. FSH B. LH

- _____ 88. Ovulating hormone
_____ 89. Secreted during the first days of menstrual cycle
_____ 90. Secreted after the estrogen level of blood increases
_____ 91. Causes final maturation of the follicle and ovum
_____ 92. Birth control pills suppress this hormone



If you have had difficulty with this section, review pages 468-471.

APPLYING WHAT YOU KNOW

93. Mr. Belinki is going into the hospital for the surgical removal of his testes. As a result of this surgery, will Mr. Belinki be impotent? Why or why not?

94. When baby Ross was born, the pediatrician discovered that his left testicle had not descended into the scrotum. If this situation is not corrected soon, might baby Ross be sterile or impotent? Why or why not?

95. Ms. Gaynes contracted gonorrhea. By the time she made an appointment to see her doctor, it had spread to her abdominal organs. How is this possible when gonorrhea is a disease of the reproductive system?

96. Mrs. Harlan was having a bilateral oophorectomy. Is this a sterilization procedure? Will she experience menopause?

97. Delceta had a total hysterectomy. Will she experience menopause?

98. WORD FIND

Can you find 18 terms from this chapter? Words may be spelled top to bottom, bottom to top, right to left, left to right, or diagonally.

M K O V I D U C T S E D H G
S E I R A V O I F U T G L L
I N H Z H M P M K O H I C W
D D V A S D E F E R E N S H
I O A C C I P J V E H Y D S
H M G R R B M N X F G Y I O
C E I O O E Z Y T I C S T E
R T N S T P S D D N O V A D
O R A O U W E B A I J S M Z
T I C M M E Y N E M D L R V
P U A E U D G M I E H I E H
Y M O T C E T A T S O R P B
R P E E R M N E G O R T S E
C O W P E R S I N X K E A P

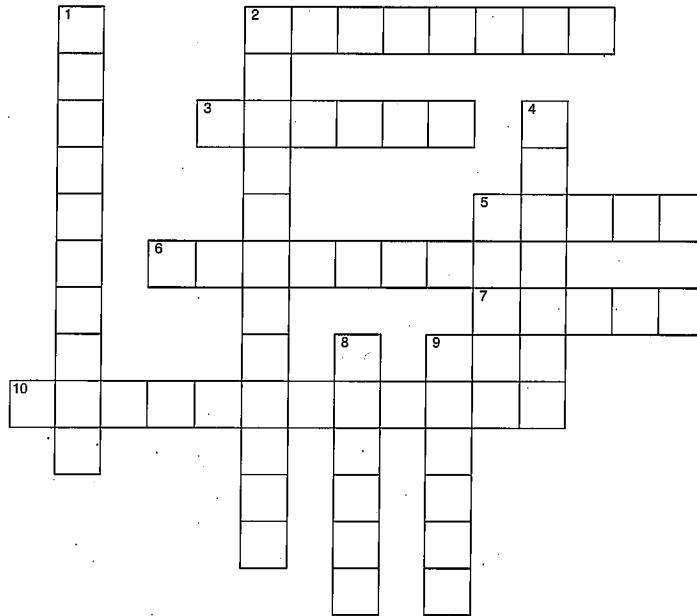
Acrosome	Meiosis	Scrotum
Cowpers	Ovaries	Seminiferous
Cryptorchidism	Oviducts	Sperm
Endometrium	Penis	Spermatids
Epididymis	Pregnancy	Vagina
Estrogen	Prostatectomy	Vas deferens

DID YOU KNOW?

The testes produce approximately 50 million sperm per day. Every 2 to 3 months, every fertile man produces enough sperm cells to populate the entire earth.

REPRODUCTIVE SYSTEM

Fill in the crossword puzzle.



Across

2. Female erectile tissue
3. Colored area around the nipple
5. Male reproductive fluid
6. Sex cells
7. External genitalia
10. Male sex hormone

Down

1. Failure to have a menstrual period
2. Surgical removal of the foreskin
4. Foreskin
8. Menstrual period
9. Essential organs of reproduction

CHECK YOUR KNOWLEDGE

Multiple Choice

Circle the correct answer.

1. What is the membrane that may cover the vaginal opening of the female called?
 - A. Hymen
 - B. Mons pubis
 - C. Labia
 - D. Clitoris
2. Which of the following statements about the menstrual cycle is *true*?
 - A. Estrogen levels are lowest at the time of ovulation.
 - B. Progesterone levels are highest at the time of ovulation.
 - C. FSH levels are highest during the proliferation phase.
 - D. None of the above
3. Semen could contain which of the following?
 - A. Sperm cells
 - B. Secretion from the prostate
 - C. Secretions from the seminal vesicles
 - D. All of the above
4. What is the failure of the testes to descend into the scrotum before birth called?
 - A. Cryptococcoses
 - B. Coccidioidomycosis
 - C. Cryptorchidism
 - D. Cholelithiasis
5. Which of the following is *not* an accessory organ of the female reproductive system?
 - A. Breast
 - B. Bartholin's glands
 - C. Ovary
 - D. All of the above are accessory organs
6. Which of the following structures can be referred to as male gonads?
 - A. Testes
 - B. Epididymis
 - C. Vas deferens
 - D. All of the above
7. Sperm cells are suspended outside of the body cavity so as to do which of the following?
 - A. Protect them from trauma
 - B. Keep them at a cooler temperature
 - C. Keep them supplied with a greater number of blood vessels
 - D. Protect them from infection
8. What is the removal of the foreskin from the glans penis called?
 - A. Vasectomy
 - B. Sterilization
 - C. Circumcision
 - D. Ligation

9. What is the colored area around the nipple of the breast called?
 - A. Areola
 - B. Lactiferous duct
 - C. Alveoli
 - D. None of the above
10. Which of the following is *true* about the postmenstrual phase of the menstrual cycle?
 - A. The endometrium is being repaired.
 - B. Luteinizing hormone is secreted.
 - C. Progesterone is being secreted.
 - D. All of the above

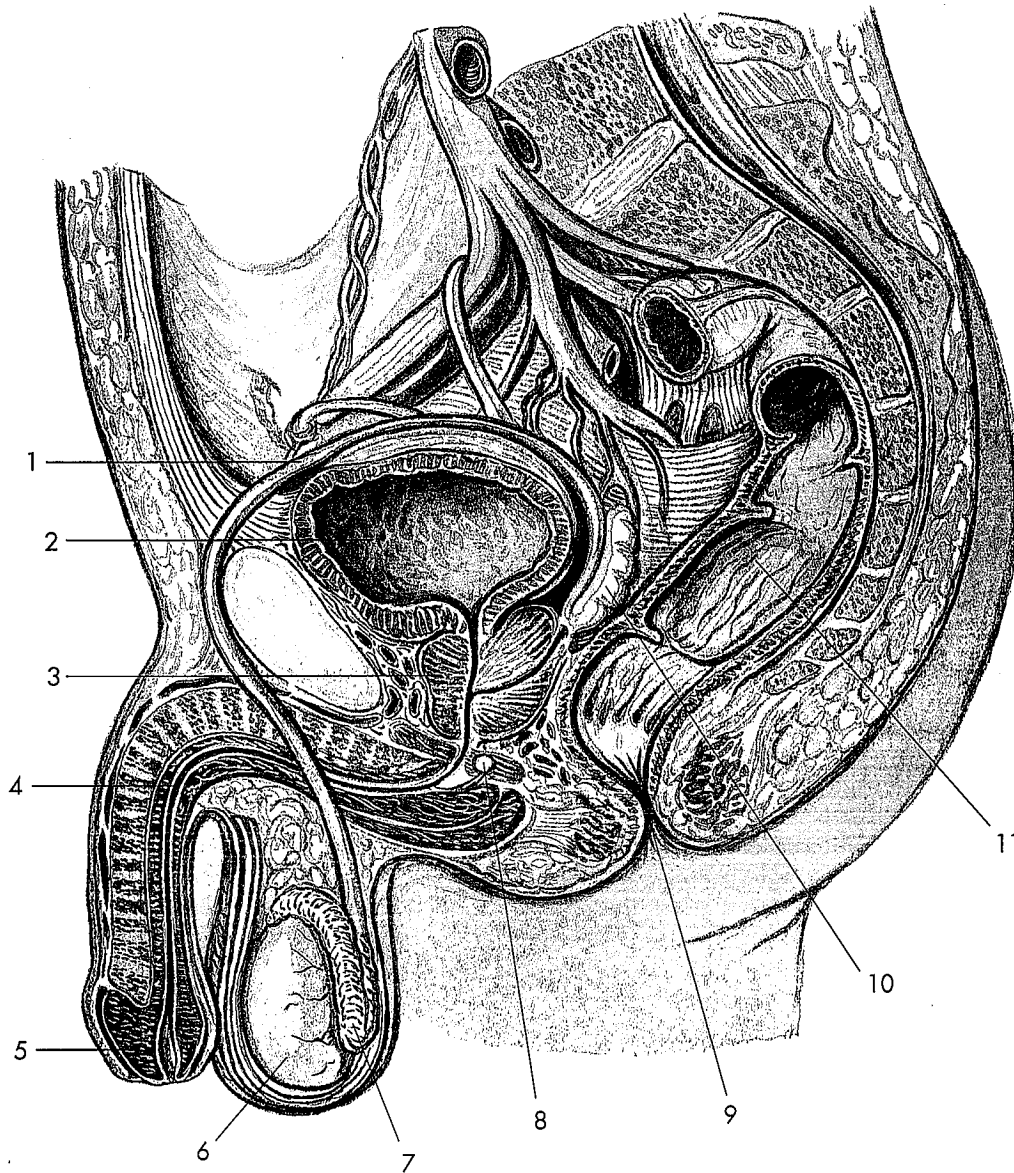
Completion

Complete the following statements using the terms listed below:

- | | |
|------------------|---------------------------------------|
| A. Clitoris | G. Hysterectomy |
| B. Endometrium | H. Prostate |
| C. Ectopic | I. FSH (follicle-stimulating hormone) |
| D. Corpus luteum | J. Ovulation |
| E. Menses | K. Scrotum |
| F. Epididymis | L. Testosterone |

11. A pregnancy resulting from the implantation of a fertilized ovum in any location other than the uterus is called _____.
12. Interstitial cells of the testes function to produce _____.
13. The doughnut-shaped accessory organ or gland that surrounds the male urethra is called the _____.
14. Surgical removal of the uterus is called _____.
15. The _____ houses sperm cells as they mature and develop their ability to swim.
16. The skin-covered external pouch that contains the testes is called the _____.
17. The lining of the uterus is called _____.
18. The hormone progesterone is secreted by a structure called the _____.
19. Fertilization of an egg by a sperm can only occur around the time of _____.
20. From about the first to the seventh day of the menstrual cycle, the anterior pituitary gland secretes _____.

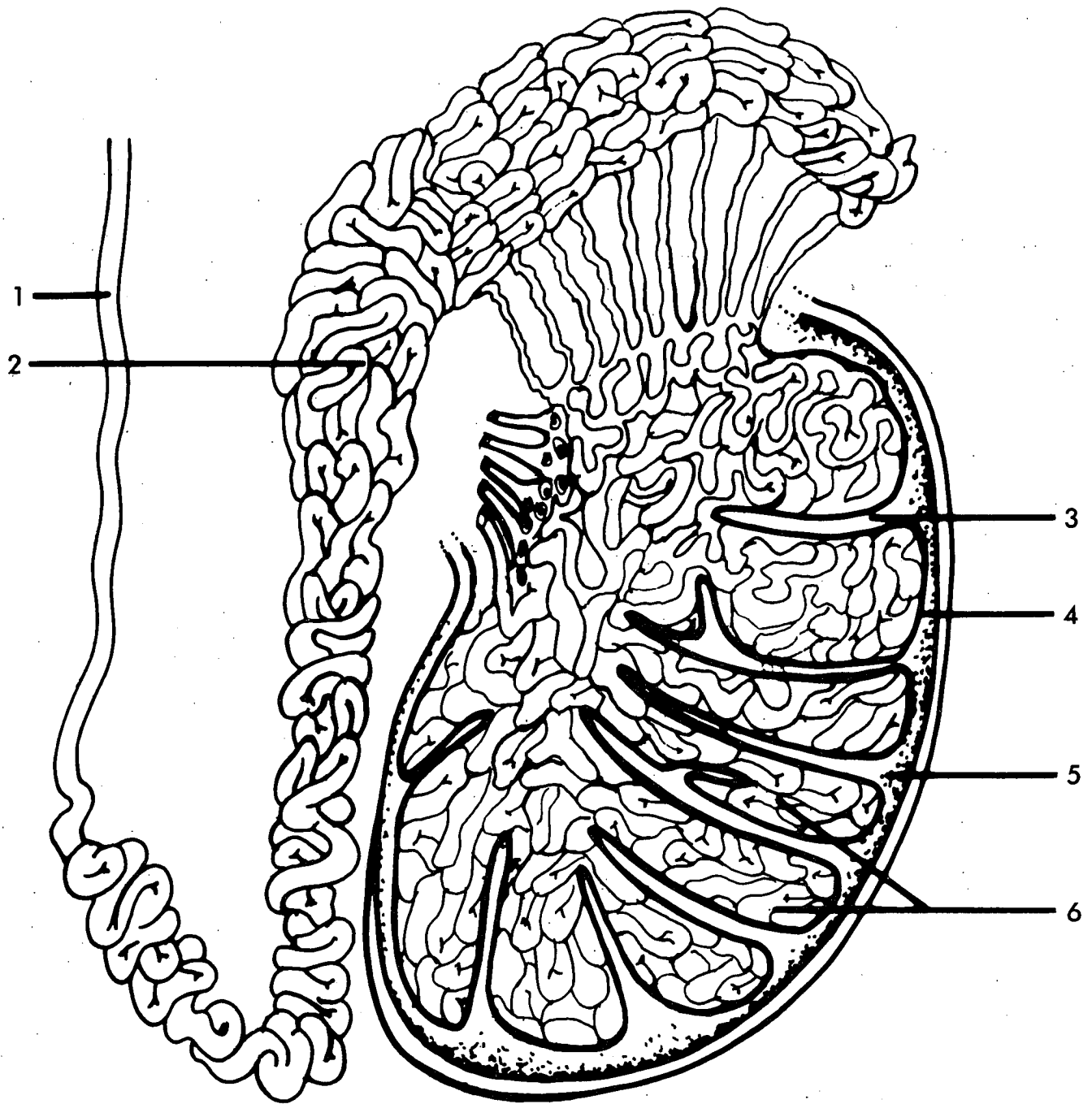
Male Reproductive Organs



- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____

- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____

Tubules of Testis and Epididymis



1. _____

4. _____

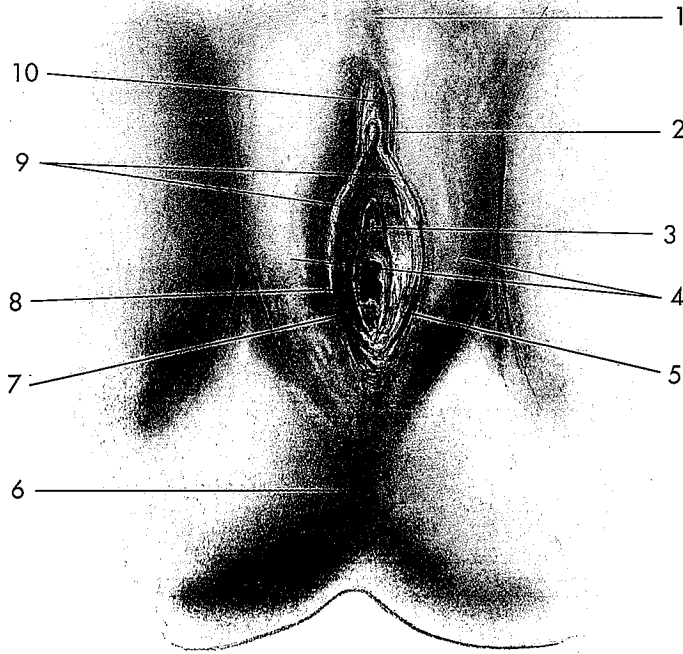
2. _____

5. _____

3. _____

6. _____

Vulva



1. _____

6. _____

2. _____

7. _____

3. _____

8. _____

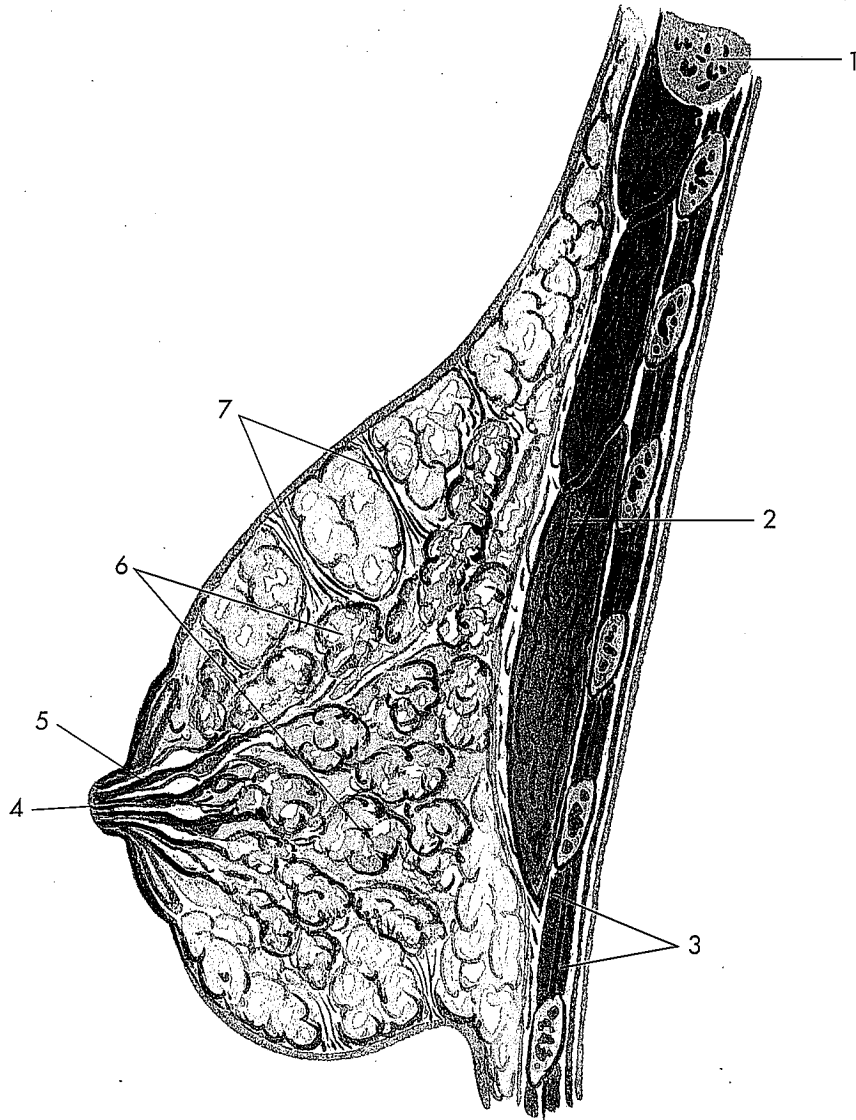
4. _____

9. _____

5. _____

10. _____

Breast



1. _____

5. _____

2. _____

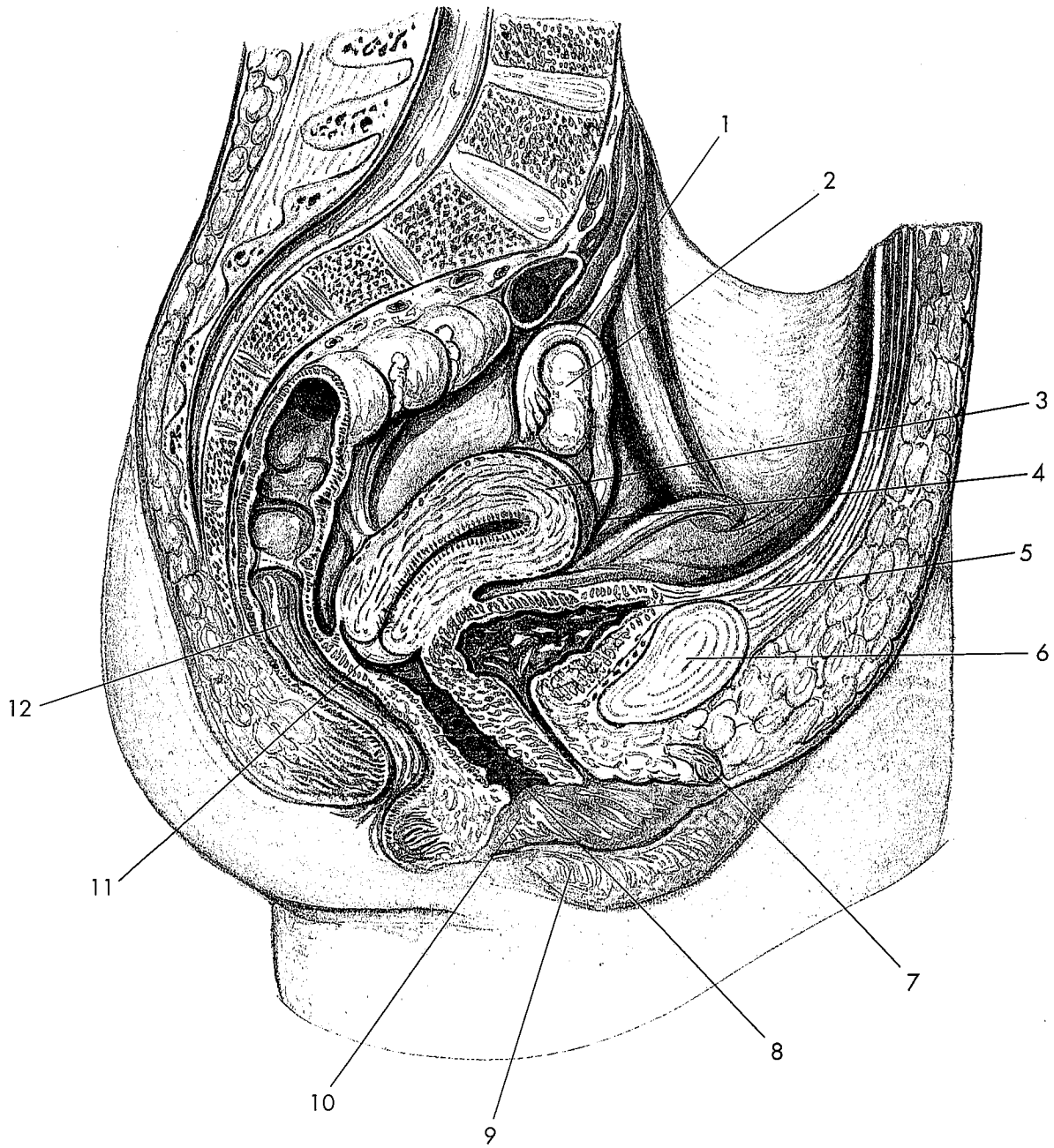
6. _____

3. _____

7. _____

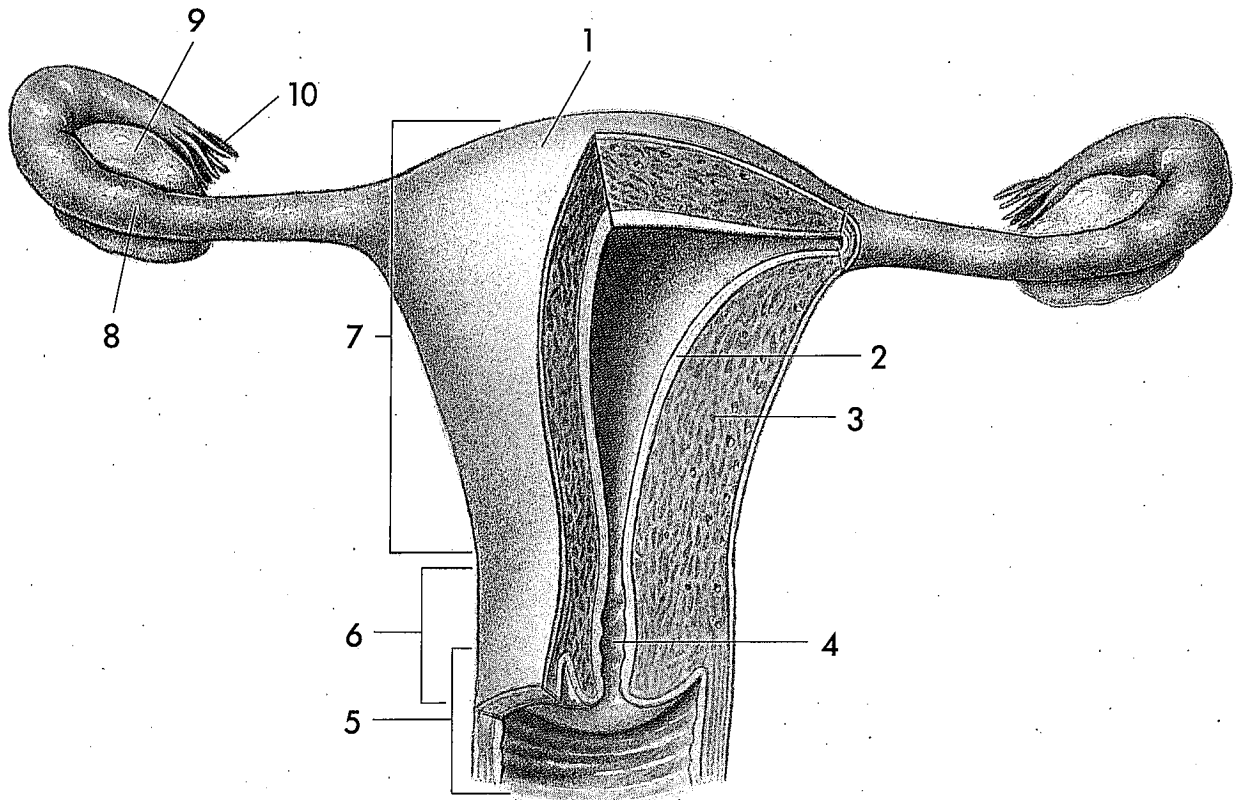
4. _____

Female Pelvis



- | | |
|----------|-----------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ |

Uterus and Adjacent Structures



1. _____
2. _____
3. _____
4. _____
5. _____

6. _____
7. _____
8. _____
9. _____
10. _____

