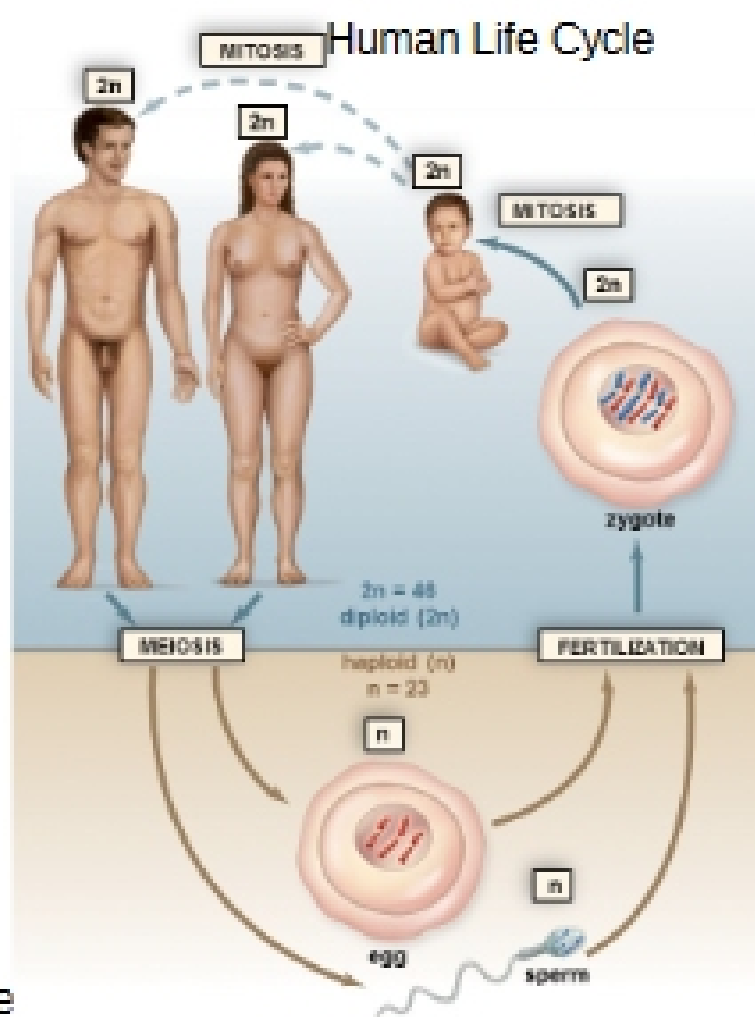
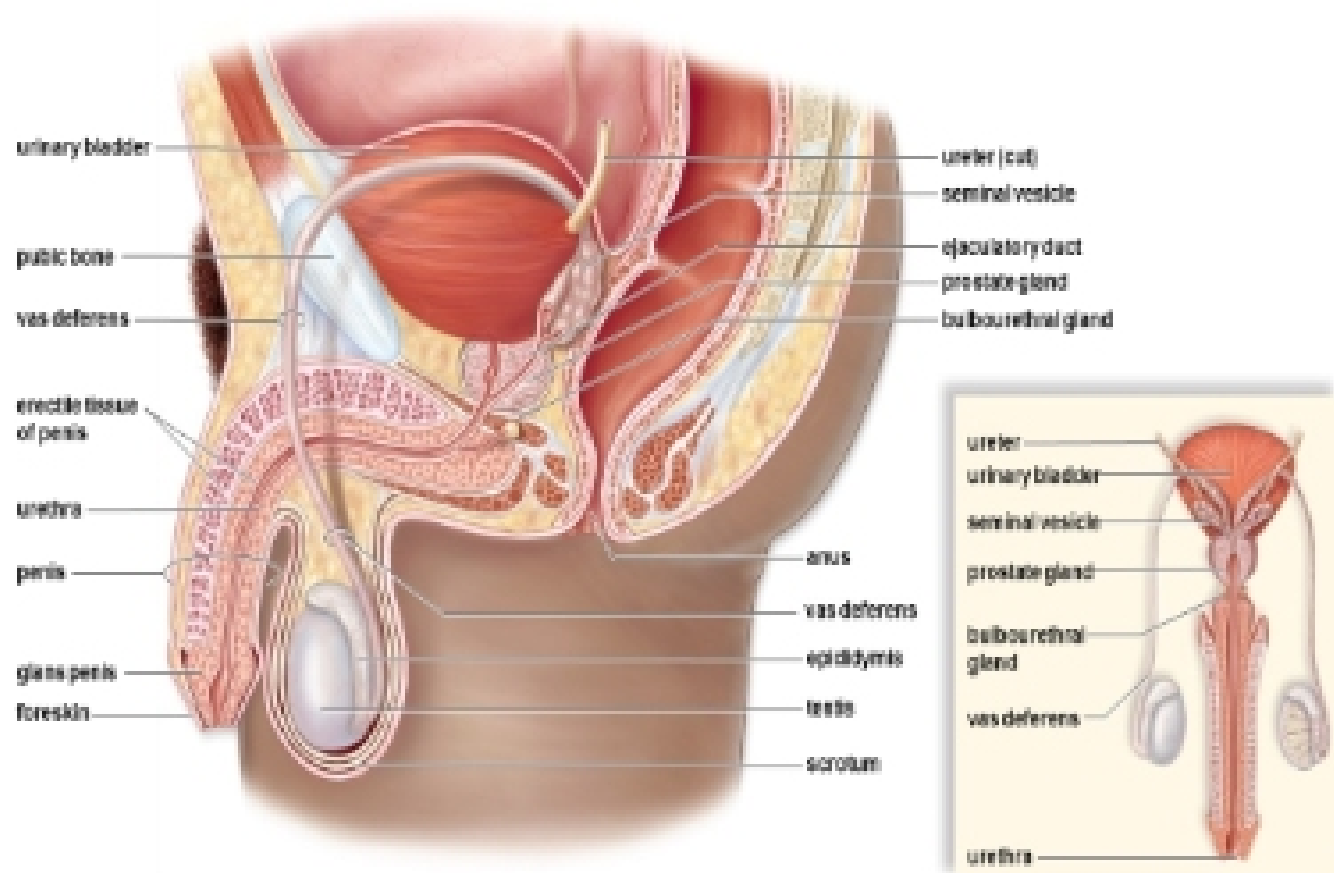


Chapter 16: Reproductive System

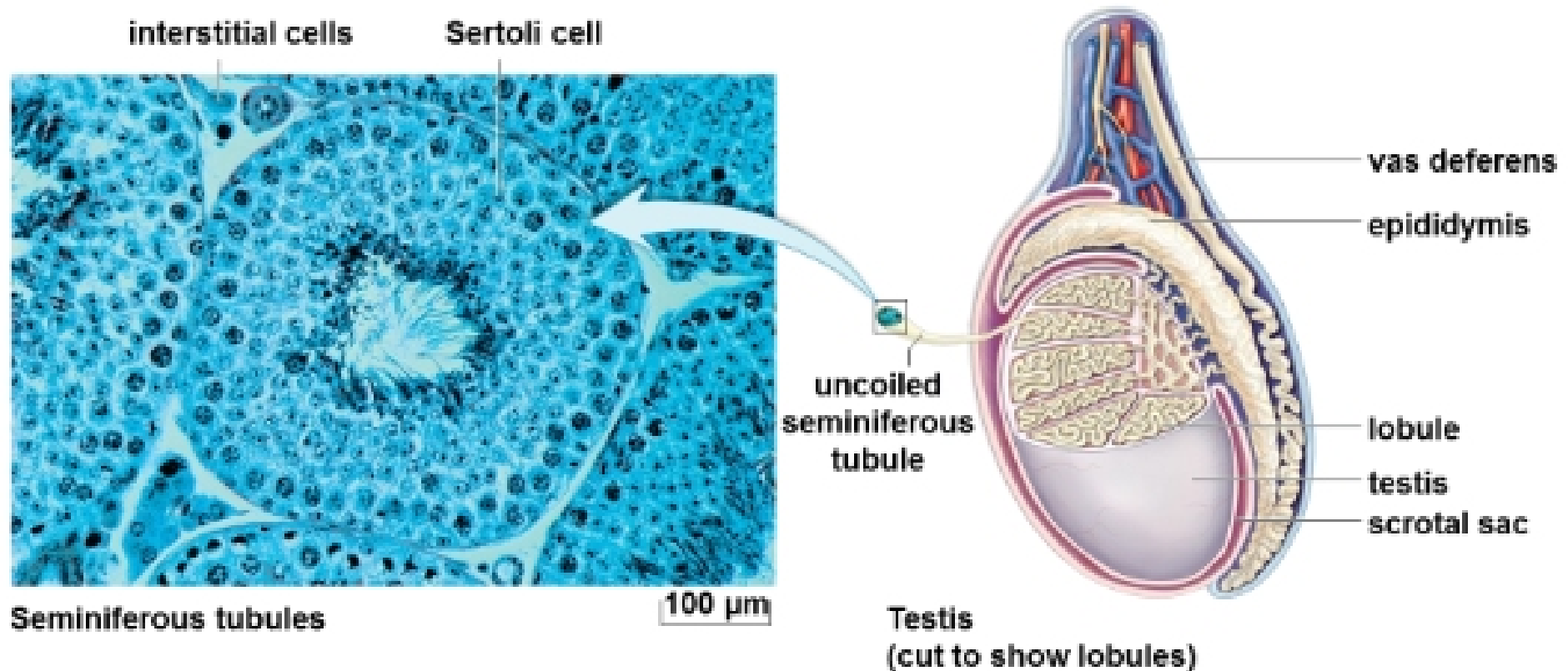
- ✓ Body / somatic cells
 - Each body cell has 46 chromosomes (23 pairs) within the nucleus.
 - Cells that have pairs of chromosomes are called diploid (2n).
- ✓ Sex cells
 - Gametes (egg and sperm) have only 23 chromosomes (1 of each pair) in their nuclei.
 - Such cells, that have only 1 of each pair of chromosomes, are called haploid (n).
 - During fertilization, a sperm and an egg combine to form a zygote, and the chromosome number is restored to the diploid number (2n) of 46.
- ✓ Mitosis and meiosis
 - Mitosis:
 - A type of duplication division in which a cell makes an exact copy of itself.
 - 1 diploid (2n) parent cell produces 2 diploid (2n) daughter cells
 - A process used for growth and repair of tissues.
 - Used by body/somatic cells (cells other than sex cells).
 - 46 chromosomes duplicate before the process. Then they are divided into 2 daughter cells with 46 each.
 - Meiosis:
 - A type of reduction division in which a cell halves the number of chromosomes.
 - A process used to form gametes (sex or germ cells) – eggs (in females) and sperms (in males).
 - Divides 23 in one and 23 in the other. Every gamete join to make the baby and sum 46.

Male Anatomy



Male anatomy: Scrotum and testes (Body is 20°C lower than body temperature)

- ✓ Scrotum
 - Sacs that hold the testes
 - Help regulate the temperature of the testes
- ✓ Testes
 - Paired organs that produce sperm and male sex hormones (made by interstitial cells)
 - Composed of seminiferous tubules where sperm are being produced
- ✓ Epididymis
 - Sperm mature and are stored here



Sperm production:

- ✓ Sperms are produced within the seminiferous tubules of the testes.
- ✓ Sertoli cells help nourish sperm and regulate the process of sperm production (spermatogenesis).
- ✓ Sperm (spermatozoa) are stored and mature in the epididymis.

Sperm anatomy

- ✓ 3 parts
 - The head is covered by a cap called the acrosome which stores enzymes needed to penetrate the egg.
 - The middle piece contains mitochondria to make ATP.
 - The tail provides movement for the sperm.

*Spermatogenesis produces sperm cells

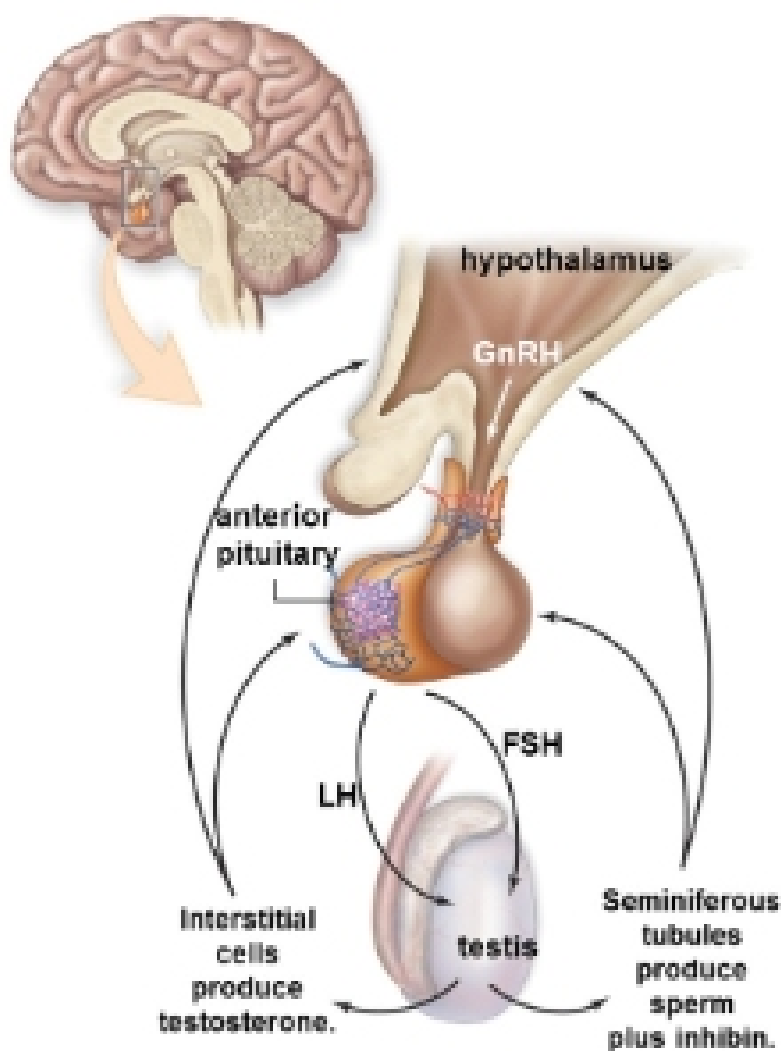
Male anatomy: Vas deferens and Urethra

- ✓ Vas deferens
 - Transports sperms to the urethra
- ✓ Urethra
 - Transports sperms out of the body

Male anatomy: 3 glands that contribute to semen

- ✓ Seminal vesicles – produce a sugary fluid that provides energy for the sperm
- ✓ Prostate gland – produces an alkaline fluid to help buffer the acidic pH of the vagina
- ✓ Bulbourethral glands – produce mucus that acts as a lubricant





- Hormonal regulation in males
- ✓ Gonadotropin-releasing hormone (GnRH) – secreted by the hypothalamus to control release of pituitary hormones
 - ✓ Follicle-stimulating hormone (FSH) – promotes the production of sperm
 - ✓ Luteinizing hormone (LH) – controls the production of testosterone
 - ✓ Testosterone – important for normal development and functioning of the male reproductive organs

Female anatomy: Genital tract

The ovarian cycle: The ovary

- ✓ An ovary contains many follicles, each containing an immature egg (oocyte).
- ✓ At puberty a female has 300,000-400,000 follicles.
- ✓ During the lifetime of a female, only 400 follicles mature.
- ✓ One follicle matures each month from puberty until menopause (end of menstrual cycles).
- ✓ Ovulation is the monthly release of an oocyte from the ovary when a follicle ruptures.

