

## MALE REPRODUCTIVE SYSTEM

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### TESTES

Testes are located outside the body within a thin pouch called the scrotum. Their presence within the scrotum is essential as it exposes them to a lower temperature than the body's core temperature, because of the rich blood vessels and muscle structures in this area. This lower temperature is crucial for sperm production (1).

### SERTOLI CELLS

Sertoli cells are essential for spermatogenesis. The number of Sertoli cells is an indicator of sperm production. Without proper maturation of Sertoli cells, the progression of spermatogenesis is not possible. The development of male gonadal sex relies on the presence of Sertoli cells. Sertoli cells also play a role in phagocytosis, removing improperly formed sperm during the transformation of early spermatids into mature sperm. In addition to these functions, Sertoli cells create a tight junction complex between neighboring Sertoli cells to form the blood-testis barrier, synthesize androgen-binding proteins, secrete anti-Müllerian hormone during embryogenesis to suppress Müllerian duct development, and regulate follicle-stimulating hormone secretion from the anterior pituitary by producing inhibin and activin (2).

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hypothalamo-hypophyseal portal system. GnRH stimulates the secretion of gonadotropins (follicle-stimulating hormone-FSH and luteinizing hormone-LH) from the anterior pituitary. FSH stimulates spermatogenesis, while LH stimulates the secretion of testosterone from Leydig cells. Sertoli cells secrete a glycoprotein called inhibin, which has inhibitory effects on the anterior pituitary. Inhibin secretion increases when spermatogenesis needs to be halted, suppressing the secretion of FSH and LH from the anterior pituitary (2,4).

## SPERMATOGENESIS

In a healthy male, approximately 150-200 million sperm are produced daily. Spermatogenesis is regulated by gonadotropins that stimulate increased Sertoli cell activity following the secretion of testosterone from Leydig cells. Spermatogenesis refers to the development process from spermatogonia to primary spermatocytes, secondary spermatocytes, spermatids, and eventually spermatozoa. The differentiation of spermatogonia into primary spermatocytes occurs in the basal compartment. Primary spermatocytes then pass through tight junctions of Sertoli cells and enter the central compartment.

In this region, meiotic divisions of spermatogenesis occur, and spermatids differentiate into sperm. Sertoli cells enclose spermatids within plasma membrane invaginations, forming small vesicles. When sperm formation is complete, the cytoplasm of Sertoli cells contracts around the sperm, releasing it into the lumen (2, 3).

## REFERENCES

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