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COURSE TITLE: PHYSIOLOGY

ASSIGNMENT TITLE: MALE REPRODUCTIVE FUNCTIONS

**SPERMATOGENESIS:** Is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis. This process starts with the mitotic division of the stem cells located close to the basement membrane of the tubules. These cells are called spermatogonial stem cells. The mitotic division of these produces two types of cells type A cells replenish the stem cells, and type B cells differentiate into primary spermatocytes. The primary spermatocytes divide meiotically (meiosis I) into two secondary spermatocytes; each secondary spermatocyte divide into two equal haploid spermatids by meiosis II. The spermatids are transformed into spermatozoa (sperm) by the process of spermiogenesis. These develop into mature spermatozoa, also known as sperm cells. Thus, the primary spermatocytes give rise to two cells, the secondary spermatocyte, and the two secondary spermatocytes by their subdivision produce four spermatozoa and four haploid cells. Spermatogenesis takes place within several structures of the male reproductive system.

**MALE FERTILITY:** Male fertility largely depends on the quality of sperm production, which is affected by a large number of genes that directly affect spermatogenesis or act indirectly via regulating the HPG axis. Expression of these genes may be altered because OS and DNA damage associated with the lifestyle and bioenvironmental factors associated with male infertility. During spermatogenesis, one of the most critical events in primary spermatocytes is the synapsis of homologous chromosomes and recombination.