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**Physiology assignment**

- 1) Spermatogenesis is the process by which the male gametes called the spermatozoa (sperms) are formed from the primitive spermatogenic cells(spermatogonia) in the testis. It takes 74 days for the formation of sperm from a primitive germ cell. Throughout the process of spermatogenesis, the spermatogenic cells have cytoplasmic attachment to sertoli cells which supply all the necessary material for spermatogenesis. Spermatogenesis occurs in four stages which are:

- Stage of proliferation: spermatogonia( $2n$ ) divides by mitosis, without and change in chromosomal number. There are usually seven generations of spermatogonia. The last generation enters the stage of growth as primary spermatocyte.
- Stage of growth: the primary spermatocyte grows into a large cell
- Stage of maturation : after reaching its full size, each primary spermatocyte quickly undergoes meiotic or maturation division which occurs in two phases.  
In the first phase , each primary spermatocyte divides into two secondary spermatocytes. Each secondary spermatocyte receives haploid or half number of chromosome. 23 chromosome include 22 autosomes and one X or Y chromosome. In the second phase, each secondary spermatocyte undergoes second meiotic division, resulting in two smaller cells called spermatids. Each spermatids has haploid number of chromosomes.
- Stage of transformation: spermatids are transformed into matured spermatozoa (sperms), by means of spermiogenesis and released by spermination.

Spermatogenesis is influenced by: sertoli cells , hormones ( FSH, growth hormone, estrogen, LH, Inhibin, activating)

- 2) Male infertility refers to a male's inability to cause pregnancy in a fertile female. In humans , it accounts for 40-50% of infertility. Some causes of male infertility are:
- Abnormal sperm production or function due to undescended testicles, genetic defects, health problems such as diabetes or infections such as chlamydia, gonorrhea.
  - Combined androgen and sperm cell production defects resulting from developmental defects such as klinefelter's syndrome and acquired testicular defects such as infections, autoimmune reactions.

- Overexposure to certain environmental factors such as pesticides and other chemicals and radiation. Cigarette smoking, alcohol, marijuana, anabolic steroids, etc.