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1. SPERMATOGENESIS

Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis. This process start 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 divisions of these produce two types of cells. Type A cells replenish the stem cells, and type B differentiate into primary spermatocytes. The primary spermatocyte divides meiotically into two secondary spermatocytes; each secondary spermatocyte divides into equal haploid spermatids. The spermatids are transformed into spermatozoa (sperm) by the process of **spermatogenesis.** These develop into mature spermatozoa, also known as **sperm cells.**

Spermatozoa are mature male gametes in many sexually reproducing organisms. Thus spermatogenesis is the male version of gametogenesis. Spermatogenesis is highly dependent upon optimal conditions for the process to occur, and is essential for sexual reproduction.

Spermatogenesis produces mature male gametes, commonly called sperm which are able to fertilize the counterpart female gamete, the oocyte, during conception to produce a single-celled individual known as **zygote**

The seminiferous tubules of the testes are the starting point for the process, where spermatogonial stem cells adjacent to the inner tubule wall divide in a centripetal direction-beginning at the walls and proceeding into the innermost part or lumen-to produce immature sperm. Maturation occurs in the epididymis. The location (testes/scrotum) is specifically important as the process of spermatogenesis requires a lower temperature to produce viable sperm specifically 1˚-8˚C lower than normal body temperature 37˚C (98.6˚F).

For humans, the entire process of spermatogenesis is variously estimated as taking 74 days (according to tritium labeled biopsies) and approximately 120 days (according to DNA clock measurement).

2. SEMEN

Semen, also known as seminal fluid, is an organic fluid that contains spermatozoa. It is secreted by gonads (sexual glands) and other sexual organs of male or hermaphroditic animals and can fertilize the female ovum.

In humans, seminal fluid contains several components besides spermatozoa: proteolytic and other enzymes as well as fructose are elements of seminal fluid which promote the survival of spermatozoa, and provide a medium through which they can move or swim. Semen is produced and originates from the seminal vesicle, which is located in the pelvis. The process that results in the discharge of semen is called **ejaculation.** Semen is also a form of genetic material. In animals, semen has been collected for cryoconservation. **Cryoconversation of animal genetic resources** is a practice that calls for the conversation of genetic material in efforts for conversation of a particular breed