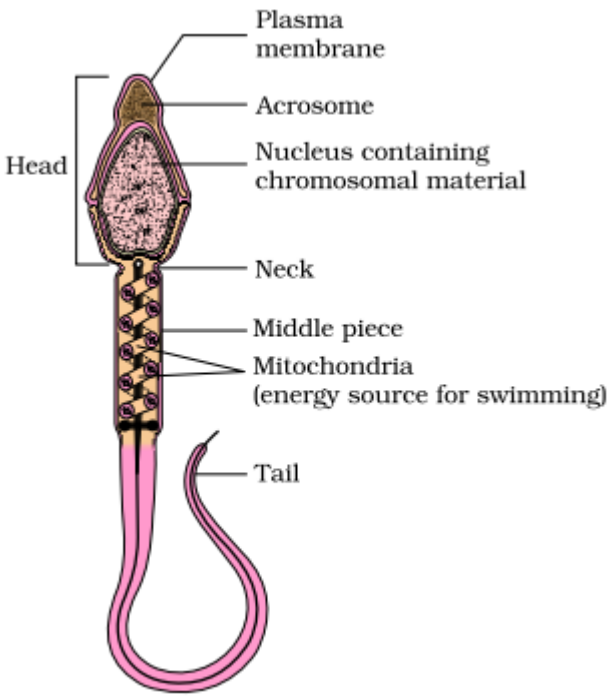
Structure of Sperm:



- It consists of a head, neck, middle piece and a tail
- Plasma membrane covers the whole body of the sperm
- The head portion of the sperm contains a haploid nucleus
- The anterior portion of the head contains an acrosome.
- **Acrosome** is a structure that is filled with digestive enzymes that help in the dissolving the membrane of the egg cell and help in fertilization of the ovum.
- **Middle Piece:** It contains numerous mitochondria that produce energy for the movement of the tail. This is important for the motility of the sperm which is essential for fertilization.
- During ejaculation 200-300 million sperms are released. At least 60% of them should have normal shape and size and at least 40% should show vigorous motility.
- **Semen:** Semen is a milky white organic fluid released by the penis during ejaculation. It consists of the sperms and the fluids secreted by the accessory ducts and the accessory glands such as the epididymis, vas deferens, seminal vesicles, prostate and the bulbourethral glands.
- The testicular hormones (androgens) maintain the functions of the male accessory ducts and glands.

Oogenesis:

The process of formation of a mature female gamete is oogenesis and it is initiated during the embryonic development stage. During this stage a couple of million gamete mother cells or **oogonia** are formed in the foetal ovary. No more oogonia are formed and added after birth.

- The oogonia form **primary oocytes**. The oogonia start the process of meiosis and get arrested at the stage of Prophase I. These cells originating from the oogonia that are arrested at the prophase I are called as primary oocytes.
- Each primary oocyte gets surrounded by a layer of granulosa cells and is now called as the **primary follicle.**
- A large number of primary follicles get degenerated between birth and puberty. At puberty, therefore, there are only about 60,000-80,000 primary follicles in the ovary.
- These remaining primary follicles get surrounded by more layers of granulosa cells as well as a new theca. They now form the **secondary follicle.**
- The secondary follicle then gives rise to the **tertiary follicle**. The tertiary follicle is characterised by the presence of a fluid filled cavity called as antrum. The theca is organised into two layers-inner theca interna and the outer theca externa. The primary oocyte grows in size and completes the first meiotic division. It is an unequal division forming a large **secondary oocyte** and a tiny first **polar body.**

- **Secondary oocyte** retains much of the nutrient rich cytoplasm.
- The tertiary follicle changes into the mature **Graafian follicle.**
- The secondary oocyte forms a new layer called as the **zona pellucida** around it.
- The Graafian follicle now ruptures to release the secondary oocyte (ovum) from the ovary by the process of **ovulation**.

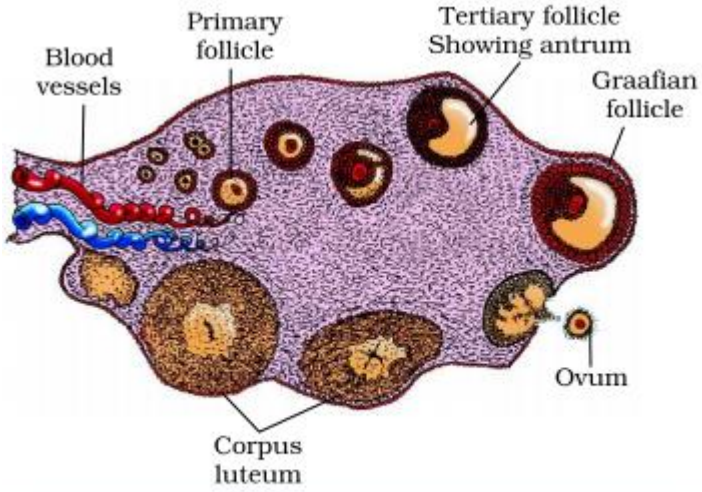


Figure 3.7 Diagrammatic Section view of ovary