6. Study of T. S. testis, T. S. ovary and V. S. of blastula, through permanent slides.

1. T.S. Testis

Dat e : / /

- Internal structure of testis shows presence of tunica albuginea and seminiferous tubules. Testis is externally covered by fibrous connective tissue called as tunica albuginea. It is internally covered by tunica vascularis formed by capillaries and externally by an incomplete covering called as tunica vaginalis.
- Seminiferous tubules are lined by cuboidal germinal epithelial cells.
- It shows different stages of spermatogenesis lie spermatogonia, primary and secondary spermatocytes, spermatids and sperms. Few large pyramidal cells are present interrupting germinal epithelium are nurse cells or sertoli cells. Sperm bundles get attached to sertoli cells with their heads. Function of sertoli cells is to provide nourishment to the sperms till maturation.

Figure:-

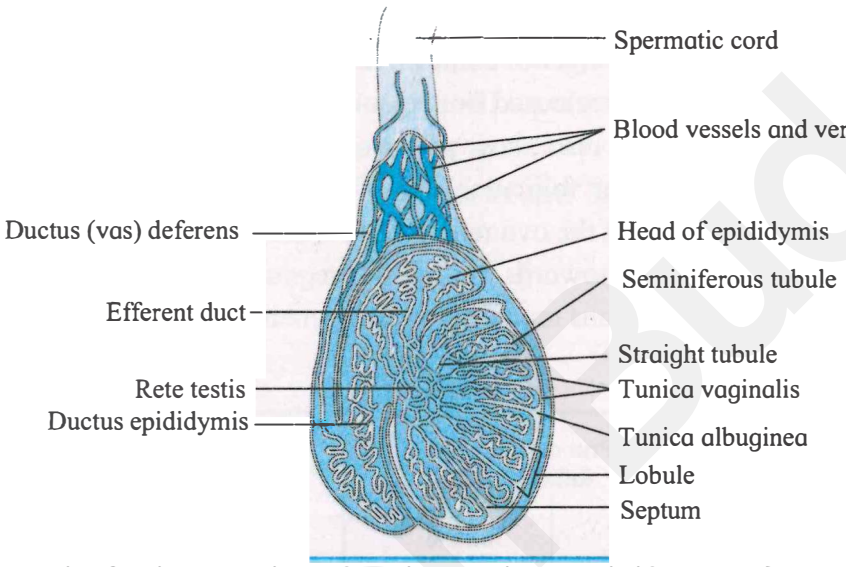


Fig. Sagittal section of testis showing seminiferous tubules

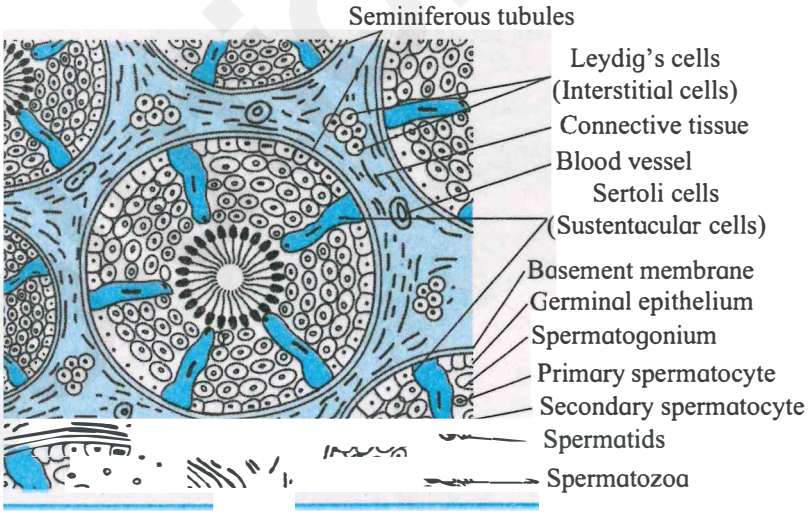


Fig. A part of tranverse section of mammalian testies

2. T.S. (or L.S.) of ovary:-

- Internally the mammalian ovary shows compact structure with outer cortex and inner medulla. The medulla shows connective tissue called as stroma. The cortex is lined by germinal epithelium. Cortical region shows different stages of development of ovarian follicles or Graffian follicle. Each follicle contains a large ovum surrounded by many layers of follicle cells. Different stages of developing ovarian follicles are seen in the cortex and consists of oocytes in different developmental stages. In the beginning, a single layer of follicular cells around each oocyte is seen. The entire structure is called as primordial follicle. The primary follicles are surrounded first by a layer of follicular cells. As the follicle grows, it forms secondary and mature follicle. The follicle grows, it forms a clean glycoprotein layer, called the zona pellucida between primary oocyte and granulosa cells. The innermost layer of granulosa cells becomes firmly attached to zona pellucida to form corona radiata. (Corona =crown; radiate = radiating)
- The outermost granulosa cells rest on a basement membrane. Encircling the basement membrane is a region called theca folliculi. Many capillaries are present in the theca folliculi.
- As a primary follicle continues to grow, the theca folliculi gets differentiated into –
  i) Theca interna: - A highly vascularised internal layer of secretory cells.
  ii) Theca externa: - An outer layer of connective tissue cells.
- One ovum from mature follicle is released from on ovary in every menstrual cycle (alternately in right and left ovary). It may also show presence of mass of yellow cells called corpus luteum, formed in the antrum or follicular cavity of an empty Graffian follicle after the release of its ovum (ovulation) .If the ovum is fertilised, corpus luteum secrets progesterone to maintain pregnancy and relaxin towards the end of pregnancy. The ovarian cortex may also show white body or corpus albicans representing a degenerating corpus luteum if the ovum is not fertilised.

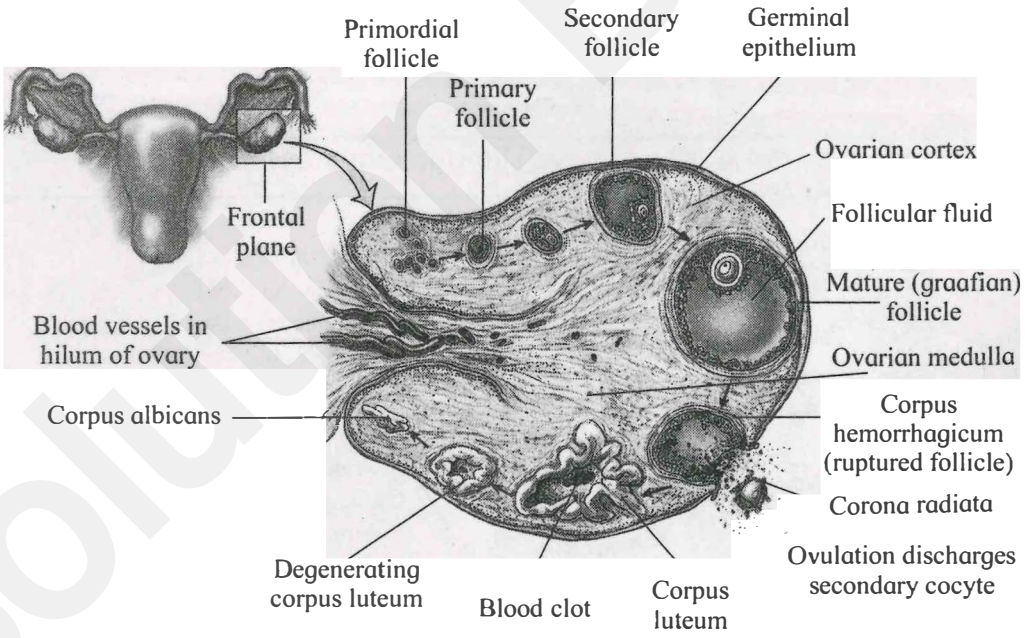


Fig. T. S. of ovary

Figure :

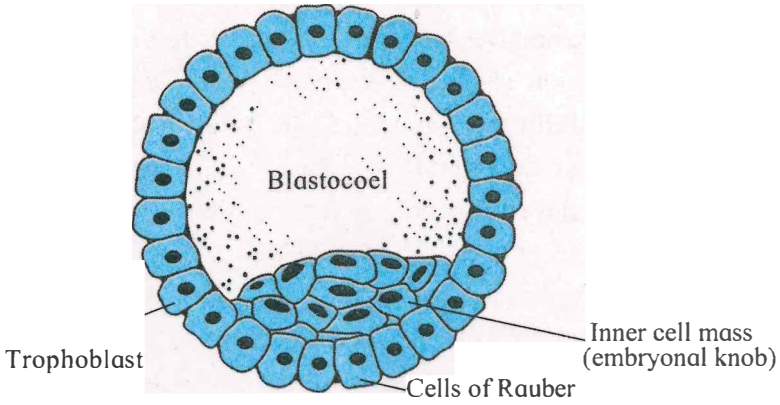


Fig. V. S. blastula

3. Study of V.S. bla tula (blastocyst or blastodermic vesicle) from permanent slide:-

The V.S. blastula shows outermost, small, flattened cell layer called trophoblast. It encloses a cavity called blastocyst cavity or blastocoel and an inner cell mass. The blastocyst cavity is filled with a fluid which is absorbed by trophoblast cells. The inner cell mass is attached to one side to trophoblast cell layer. The trophoblast cells in contact with the inner cell mass (embryonal knob), are called the cells of Rouber. The trophoblast cell layer produces extra embryonic membranes while the inner cell mass further develops into proper embryo.

Comment on the differences between T.S. of testis and T.S. of ovary :

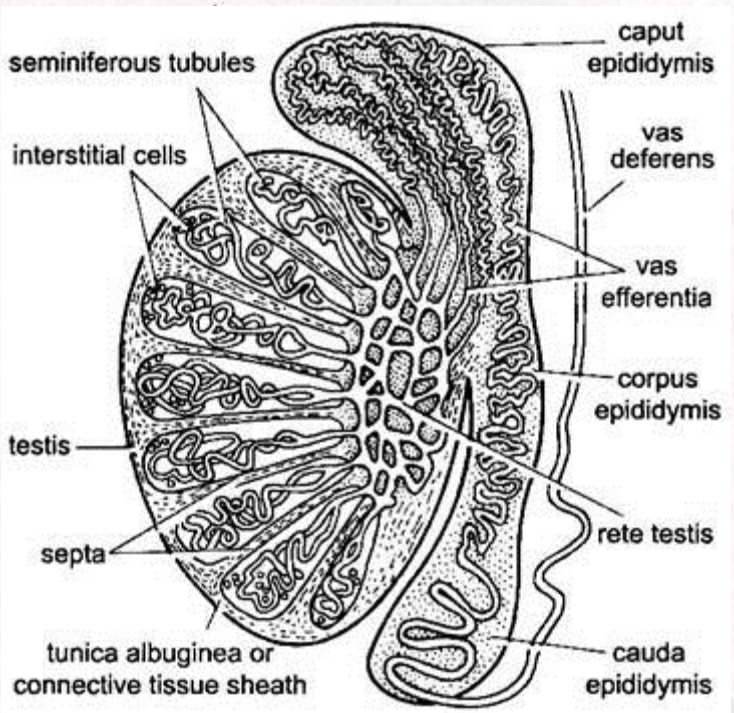
T.S of Mammalian Testes

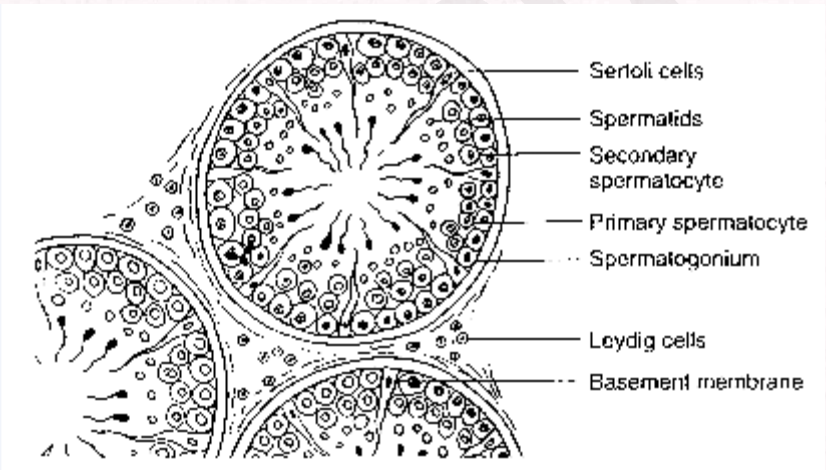
The mammalian testes are covered with a thick fibrous tissue called tunica albuginea
The testes consist of a many seminiferous tubules embedded in the interstitial tissues.
Various types of cells are present from outside towards the lunar in the following order:-
Spermatogonia(2n)———> Spermatocytes (2n) ———Sepermatids(n)———>Spermatozoa(n)
i.e. sperms
Between the germinal cells, pyramidal shaped cells called Sertoli cells are present
A large number of sperms have their head embedded in the Sertoli cells.
The interstitial tissue has Leydig cells which produce testosterone.

T.S. of Mammalian Ovary

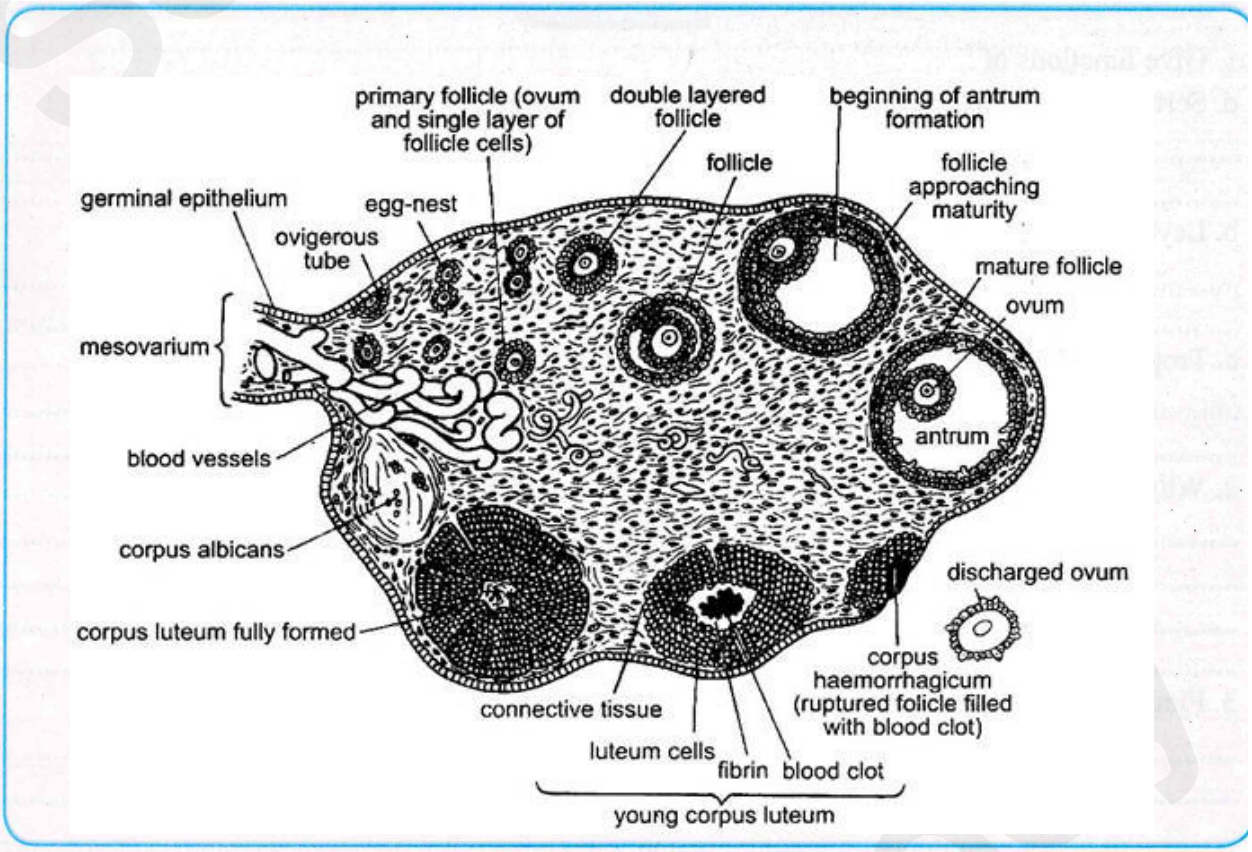
A mammalian ovary is a solid structure bounded germinal epithelium followed by a thick layer of fibrous tissue called tunica albuginea.
The ovary consists of the outer cortex and inner medulla.
The medulla consists many rounded or oval bodies called ovarian follicles at various stages of development.
The development of follicle is as follows:-
1^{ry} follicle——>2^{ry} follicle—>3^{ry} follicle—->Graffian follicle—>corpus luteum
The cortex contains round and mature follicles along with corpus luteum.

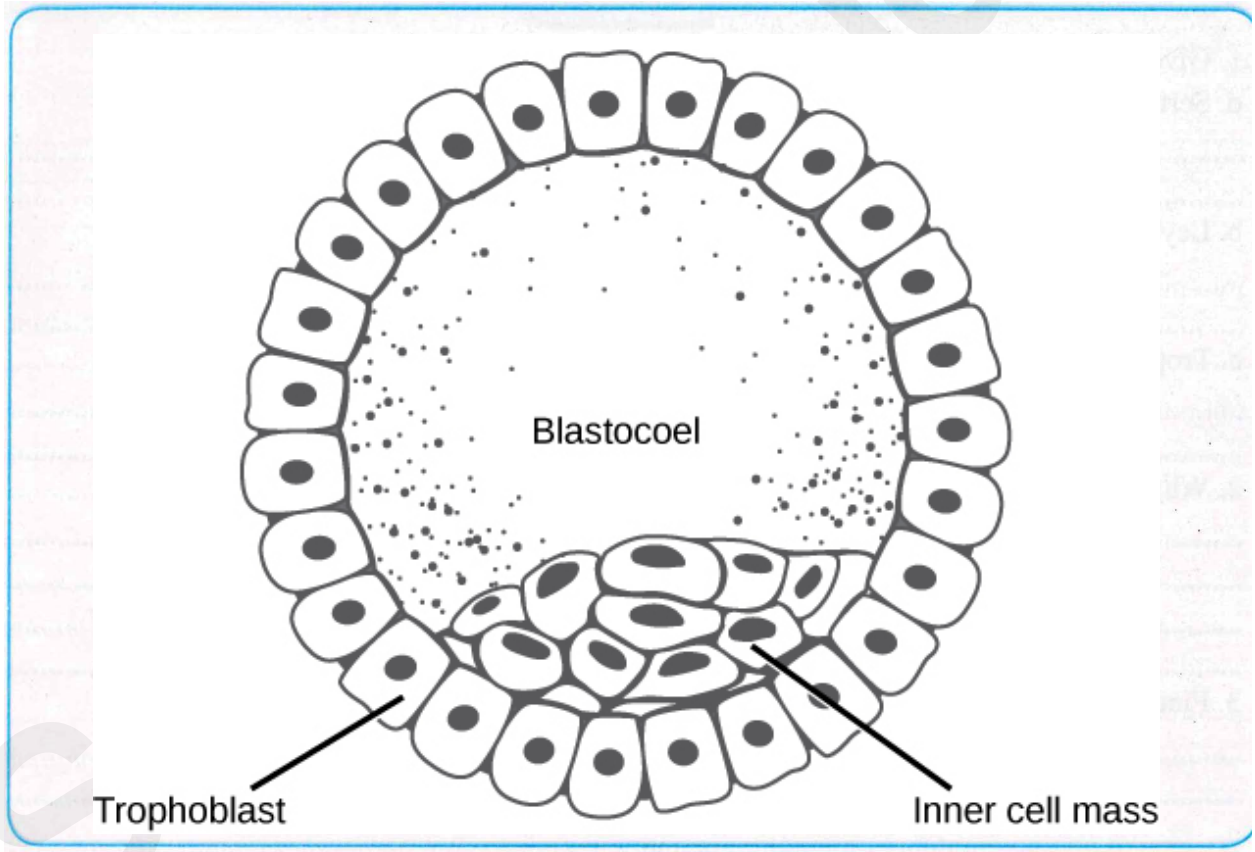
Sketch diagram





Sketch diagram





Questions

1.Give functions of :

a. Sertoli cells Sertoli cells keep the germ cells that start the process healthy and nourished. They also function atthe end of spermatogenesis by absorbing extra cytoplasm from newly created spermatozoa, just prior to their release into the lumen of the seminiferous tubule.

b. Leydig's cells Leydig cells are interstitial cells located adjacent to the seminiferous tubules in the testes. The best-established function of Leydig cells is to produce the androgen, testosterone, under the pulsatile control of pituitary luteinizing hormone (LH)

c. Trophoblast They are cells forming the outer layer of a blastocyst, which provide nutrients to the embryo and develop into a large part of the placenta. They are formed during the first stage of pregnancy and are the first cells to differentiate from the fertilized egg.

2. Why testis are extra abdominal in position ?

It is because its temperature is 1-3degreeC lower than the normal body temperature, which is essential for the production of sperms or male gametes.

Testis in men are placed outside the body in order to maintain the requiered body temperature for the production of sperms.

3. Find out more about cells of Rauber.

Cells of Rauber are found in the trophoblast cells in contact with the inner cell mass of the blastocyst. Blastocyst contains blastomeres which are arranged into an outer layer called the trophoblast. Inner group of cell connected to trophoblast that is called the inner cell mass. These cells appear like knob at one pole that is called emotional knob. The trophoblast cells connected to the embryonal knob those cells are called cells of Rauber.

4. Differentiate between spermatogenesis and oogenesis.

Spermatogenesis	Oogenesis
1.The production of sperms from spermatogonia is known as spermatogenesis	1.The production of eggs from oogonia is known as oogenesis
2. Occurs in testes	2.Occurs inside the ovary
3. All stages are completed in testes	3.The major part of oogenesis occurs inside the ovary. The last few stages occur in the oviduct.
4. It is a continuous process	4.It is a discontinuous process. The early stages take place in the foetus and the rest in later stages of life
5. Produces motile gametes	5. Produces non-motile gametes
6. Equal cytokinesis occurs during the spermatogenesis producing four sperms	6. Unequal cytokinesis occurs during oogenesis ultimately producing one ovum and four polar bodies

5. Write functions of :

a. Blastocoel (1) it permits cell migration during gastrulation.
(2) it prevents the cells beneath it from interacting prematurely with the cells above it. The blastocoel plays an important role in development of cell as it sets the stage for future growth and change in the cells of the early embryo.

b. Inner cell mass In early embryogenesis of most eutherian mammals, the inner cell mass (abbreviated ICM and also known as the embryoblast in mammals or pluriblast) is the mass of cells inside the primordial embryo that will eventually give rise to the definitive structures of the fetus.

c. Trophoblast Trophoblasts are cells forming the outer layer of a blastocyst, which provide nutrients to the embryo and develop into a large part of the placenta.

Remark and Signature of Teacher .....