

EXERCISE 2 MAMMALIAN SPERMATOGENESIS

The rat testis will illustrate similarities and differences between an amphibian and a mammalian testis. The tunica albuginea and seminiferous tubules are exactly alike in both animals. However, the testis of rats have no spermatocysts and the cells are orderly arranged such that the youngest cells are found near the basement membrane and the oldest ones are found towards the center or lumen of the tubules. Such arrangement of cells is known as *Cell Association*. Roughly, it forms a triangular group of cells within the tubule.

Each segment of the seminiferous tubule is in one stage of the cycle and the next stage is in the tubular segment adjacent to it. Hence, there is a sequential order of stages along the entire length of the tubule. This is called the *wave of seminiferous tubule*. There are 14 cell associations or stages of a cycle in rats and only six in human. All the stages of a cycle, thus, can be observed in one section of the testis.

Focus the slide of a rat testis and identify the following:

1. Spermatogenic cells – the same types as those of the frog’s testis but are concentrically arranged from the periphery to the center of the tubule according to their stage of development, i.e., from spermatogonia to spermatozoa. Note that there are different groups of cell types or cell association in different segment of the tubule. ***Are all cell types represented in each segment?***

2. Somatic cells – these are the nonspermatogenic cells.
 - A. Sertoli cells – large cells with distinct nucleoli located inside the seminiferous tubules. They may be seen lying parallel to the basement membrane or its apical end towards the lumen.
What is the significance of this difference in position?

 - B. Leydig cells – a cluster of three to five large cells found in between the seminiferous tubules. They have a clear cytoplasm and nuclei. Blood vessels and nerves may be seen adjacent to them.

Draw and label the parts of the mammalian testis and the cells in it.

Benjamin Kimberly B.
Co Elisa L.

Questions:

1. What histological features distinguish the frog's testis from the rat's testis? Tabulate your answers.

Histological Features	Frog's Testes	Rat's Testes

2. What cells are most prevalent and what cells are usually absent in the mammalian stages of seminiferous tubules? Why?

3. Correlate the histological features of the Leydig cells with their function.