

Abstract

Sertoli cells in testicles are the main building blocks of the seminiferous tubules where they facilitate the process of spermatogenesis. Although, the Sertoli cells were discovered by Enrico Sertoli more than a 150 years ago, there is still much to discover about their development and functions. The Sertoli cells are critical for the development of germ cells by the provision of hormonal, nutritional and physical support as well as by engulfment of their emerged waste. Since such intimate nurturing interactions with developing spermatocytes require a stable and isolated environment, Sertoli cells themselves create a protected endoluminal compartment sealed off by the blood-testis barrier (BTB). The BTB is a junctional complex formed between adjoining Sertoli cells and serves as an impermeable barrier in the paracellular space. However, spermatogonial stem cell initiating the spermatogenesis lies in front of the BTB closure, hence the developing spermatocytes have to pass through the BTB which is tightly regulated to maintain tissue homeostasis. BTB also exhibits immunological functions, because it can either sequester germ cell-specific antigens from the systemic circulation or release them behind the BTB. The aims of my thesis are to provide a brief overview of Sertoli cell functions in spermatogenesis, and then focus on the contribution of Sertoli cell and role of BTB to the maintenance of testicular immune privilege.

Key words: testis, Sertoli cell, cellular junctions, blood-testis barrier, testicular immune privilege