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Genetic and Epigenetic Regulations of Embryonic Male Germ Cell Development and Adult Spermatogenesis

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Message from the Guest Editors

A new life starts when a spermatozoon fertilizes an egg. A special cell population, the primordial germ cells (PGC), forms during the embryonic stage, and they migrate to the embryonic gonads thereafter. In males, the PGCs develop into male germ cells and undergo spermatogenesis. Spermatogenesis begins from puberty, and spermatogonia undergo mitosis, meiosis, and spermiogenesis, finally forming sperm. The whole process of embryonic male germ cell development and spermatogenesis is precisely regulated. Many genes have been identified to play key roles in this process, and epigenetic factors are a critical component of gene expression. It has been established that a dynamic cascade of epigenetic changes occurs during PGC development and, later, spermatogenesis. Defects in genetic and epigenetic regulation are associated with male infertility. The main aim of this topic is to introduce the new findings of the genetic and epigenetic regulations of embryonic male germ cell development and adult spermatogenesis and to explore the molecular pathogeny associated with their disorders, which lead to male infertility.

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