

Abstract

This work is a summary of literature on peculiarities of spermatogenesis in juvenile mouse males (*Mus musculus*) and their utilization. Spermatogenesis is a process that leads through meiosis to sperm production. The cell undergoes in waves the following cell types: spermatogonia, spermatocytes, spermatids, and spermatozoa. Juvenile mice (whose testes size and sperm count have not reached their maximum) are often used to study individual cell types. The transition between cell types takes shorter time in juveniles. Spermatozoa from the 1st wave of spermatogenesis (WS) are derived from prenatal gonocytes, allowing earlier sperm production. They have a lower frequency of crossing over (CO rate) due to a different processing of CO intermediates; the consequence can be aneuploidy (one chromosome less/more). Spermatozoa from the 2nd WS still display lower CO rate. In 3rd WS testes descend and their temperature decreases to 33°C; CO rate is more like in adults. In 4th WS is typical testicular supportive cells mature and CO rate is similar to adult levels. Juvenile males also suffer from more frequent and severe sperm malformations. Low CO rate should not have an impact on fertility; errors are eliminated during meiotic checkpoints. However, the children of young fathers have a higher risk of aneuploidy, such as Down syndrome, which might be caused by low CO rate and subsequent chromosome segregation errors during meiosis.