

## **Abstract**

Spermiogenesis is a complicated process in which the haploid spermatids differentiate into morphologically mature sperm. Morphological changes include condensation of chromatin and histone-to-protamine replacement, fusion of Golgi-derived vesicles to form acrosomal cap, flagellum formation, reduction of cytoplasmic volume and organelles rearrangement. Ubiquitin-proteasome system plays a key role in these processes. Ubiquitination is a posttranslational modification, leading to the labelling of intracellular proteins targeted for degradation by 26S proteasome. Importance of sperm ubiquitination, is supported by the fact, that deficiency of ubiquitin-proteasome system can lead to infertility at various degrees. During the subsequent sperm maturation in the epididymis extracellular ubiquitination of abnormal sperm and sperm quality control take place. Ubiquitin-proteasome system plays a key role during fertilization, when the sperm 26S proteasome is co-responsible in zona pellucida penetration. The purpose of this assay is to describe the effect of ubiquitin-proteasome system during different stages of spermiogenesis in mammals.