

Haprin-deficient spermatozoa are incapable of in vitro fertilization.

Abstract

Haprin (TRIM36) is a ubiquitin-protein ligase that mediates ubiquitination and subsequent proteasomal degradation of target proteins. It is expressed in the testes in both mice and humans and is thought to be involved in spermiogenesis, the acrosome reaction, and fertilization. However, the functional role of Haprin is poorly understood. The aim of this study was to investigate the physiological role of Haprin in fertility. Homozygous haprin-deficient mice were generated and these mice, and their spermatozoa, were analyzed to detect morphological and fertility-related abnormalities. In these models, normal spermatogenesis was observed but sperm quality was reduced with haprin-deficient mice having poorer sperm morphology and motility than wild-type mice. Interestingly, haprin-deficient mice showed normal in vivo fertility but could not fertilize oocytes under standard in vitro fertilization conditions. In conclusion, this study demonstrated that Haprin deficiency causes morphological abnormalities in spermatozoa, indicating that Haprin is involved in spermiogenesis.