

Abstract

Olfactory receptors are the key component of the oldest sense of sensoric evaluation of surrounding environment – sense of smell. This sense is extremely highly developed in rodents, as it is involved in modulation of sexual behaviour and aggressivity. However, the expression of olfactory receptors is not limited only to olfactory organs. There is evidence of expression in various tissues. We focus on expression in testicular tissue and in stages of spermatogenesis. Also, we interspecifically compare the level of expression of several receptors in testes and olfactory tissues of two rodent species of the genus *Apodemus* (*A. sylvaticus* and *A. microps*). To analyze this, we utilized 454 transcriptomic sequencing as well as quantitative PCR. We have detected expression of already described olfactory receptors superfamilies (odorant receptors and vomeronasal receptors type1). For the first time we present detected expression of trace- amine associated receptors and second type of vomeronasal receptors. We discuss our results in context of different social context of two presented species. In the same way we discuss potential role in spermatogenesis and/or in spermatozoa.