

## **Abstract**

The evolution history of mammals is connected with the dominance of smell and olfactory communication, which are important sense and communication channels also in recent forms. Two systems are involved in detecting and processing the molecules of scent, the main and the accessory olfactory system. These systems distinguish different types of scents, odorants and pheromones, which are also detected by different types of receptors. Significant factors for comparison of the ability of smell between mammals are both the amount of olfactory genes and the size and complexity of olfactory structures. The main emphasis in this thesis is put on the sensory part of the olfactory system and hence there is effort to support characterization of particular taxa by genomic studies. The ability of smell, respectively amount and variation of olfactory gene repertoires has been formed during the evolution on different circumstances and the ecological adaptation played a great role. The amount and diversity of olfactory receptors vary a lot in mammals and range through anosmatic Cetaceans and microsmatic bats to macrosmatic carnivores. Present thesis is focused to the superorder Laurasiatheria because of its extensive ecological differentiation and diversification of smell abilities (from anosmatic to macrosmatic mammals). The aim of this thesis is to summarize the knowledge about the role of evolutionary and ecological factors in forming the olfactory gene repertoires, and thus smell, in different mammals with detailed elaboration in Laurasiatheria.