

## **Abstract**

Monozygotic twins result from the splitting of one embryo in early embryonic development. The developmental stage, in which the splitting occurs, is the main factor determining the degree of sharing fetal sacs. The etiology and mechanism of monozygotic twinning are still unknown. The human and two species of armadillo, *Dasypus novemcinctus* and *Dasypus hybridus* are the only mammals that regularly produce monozygotic multiple pregnancies. The spontaneous occurrence of monozygotic twinning is 0,45 % of all births. The monozygotic twin pregnancies have been reported to occur at a higher rate following the increasing interest of assisted reproduction technologies. In certain consideration, we understand them as a side effect of infertility treatment because monozygotic twins result in a higher rate of prenatal mortality, premature birth and congenital anomalies than singleton pregnancies. This bachelor thesis aims to summarize knowledge about the formation of monozygotic twins in mammals. Also, it tries to discuss potential mechanisms and risk factors which could influence their formation. Monozygotic twins are an important model for explaining the genetic predisposition of some diseases. The thesis also introduces the ways of experimental production of monozygotic twins.

**Keywords:** monozygotic twins, assisted reproduction technologies, risk factors, splitting