

## **Abstract**

Microvesicles and exosomes are extracellular vesicles of nanometer size derived from cell membranes. Due to their ability to transfer proteins, lipids and RNA, microvesicles and exosomes are now considered to be a common form of communication between somatic cells. Microvesicles and exosomes have been detected in the reproductive organs of male and female mammals, where they mediate the transport of molecules between cells and thus promote their communication during physiological and pathological processes. Signalling through microvesicles and exosomes is involved in sperm maturation processes, which enrich these vesicles for molecules required for motility and fertilization capacity. Similarly, during oocyte maturation, microvesicles promote communication between follicle cells and its growth. During fertilization, the molecules transported by microvesicles promote capacitation and acrosomal reaction and, after gamete fusion, support the developing embryo and its subsequent implantation in the uterus. The main focus of this bachelor thesis is to discuss the role of microvesicles and exosomes in various processes in mammalian reproduction from sperm and egg maturation to successful fertilization and embryo implantation. A significant part of the thesis is devoted to the presentation of molecules transported by microvesicles and exosomes between cells and a discussion of their function in reproductive processes.

**Keywords:** microvesicles, exosomes, cell communication, gamete maturation, reproduction