

The process of maternal recognition of pregnancy and subsequent implantation of the embryo have been the object of research of scientists for many years. Coordinated in time and place dialogue between the mother and the embryo appears when a number of biomolecules and it is necessary for the proper establishment of the pregnancy and the next development of the embryo. It is known that communication between the blastocyst and the surface epithelium of the endometrium is carried out with the participation of many biologically active factors, such as hormones, adhesion molecules, cytokines, growth factors, or lipids. The expression of these molecules can be regulated at many levels. One of the regulatory mechanisms is carried out with short, non-coding microRNAs (miRNA), molecules capable of post-transcriptional silencing of the gene expression.

In recent years increasing attention is given to the biological role of extracellular vesicles secreted by all the cells. Their biochemical composition is strictly dependent on the type of cells from which they are released. They transport proteins and nucleic acids, including miRNAs and can modulate processes occurring in target cells. We classify the vesicles based on size on: exosomes (<100 nm) and microvesicles (> 100 nm). Both populations can be generated via different pathways of biogenesis, controlled by cells, as well as extracellular signals. However, the mechanisms responsible for the selection of the biogenesis pathway and the type of extracellular vesicles released by cells have not yet been discovered. Thus, in this project we decided to answer the question whether miRNAs and hormones involved in the process of maternal diagnosis of pregnancy have an influence on the selection of the biogenesis pathway and the type of extracellular vesicles released by cells.