

The aim of this project is uncovering the mechanisms of trophoderm (TE) lineage specification in rabbit embryos.

Early stages of eutherian mammals development are devoted to differentiation of first cell lineages – pluripotent epiblast, and extraembryonic primitive endoderm and trophoderm (TE). TE is the first cell lineage that is generated through differentiation in mammalian ontogenesis. TE is an extraembryonic lineage, i.e. does not take part in the generation of the embryo proper. Yet because development of eutherians takes place in utero, proper differentiation of TE is prerequisite for supporting the pregnancy, as TE is responsible for embryo implantation in the uterus and forms the embryonic part of the placenta. Understanding the mechanisms of TE specification is therefore important both because this is the first differentiation event in embryonic development, but also because this lineage is crucial for correct embryonic and fetal development of both human and animals. The research undertaken in this project will allow us to understand the mechanism of embryonic development and first lineage differentiation. Specifically we want to answer the following questions:

- (1) Whether TE differentiation in rabbit embryos is dependent on cell polarity in early embryo?
- (2) Whether TE differentiation in rabbit embryos is dependent on Hippo pathway activity in early embryo?
- (3) When (at what specific stage) first differentiation event occurs and when TE lineage is irreversibly committed?

Obtained results will allow for the future use of rabbit embryos as a model for studying mammalian development, including primates, where embryo derivation is more difficult. By careful study of each factor involved in the process, we will gain better understanding of mechanisms of differentiation.