

## **Abstract**

Mammalian Target of Rapamycin (mTOR) is serin-threonin kinase, which has become a major topic in many studies in the last decade, leading to new insights into how cell works. This kinase is involved in proteosynthesis, metabolism, cell cycle regulation, proliferation and responses to nutrients and growth factors. There are certain diseases caused by mutations in mTOR gene, which lead to abnormal function of this kinase. These diseases include cancer or fertility disorders. mTOR research is also beneficial due to the search for drugs that could rescue its function and thus provide treatment for these diseases. The best-known drug is inhibitor Rapamycin and its derivates.

The aim of this bachelor thesis is to summarize the knowledge about how mTOR can be regulated, the role of its substrates in cell function and to define the role of mTOR in oocyte development, translation and human health.

**Keywords:** Oocyte, mTOR, translation, 4E-BP1, MPF, meiosis, AKT