

My bachelor thesis deals with the effect of mTOR pathway to different processes in the cell. In particular, it focuses on the influence of translation initiation. mTOR protein is part of two complexes, which occur in different organisms – mTORC1 and mTORC2. Eukaryotic initiation factor 4E (eIF4E) plays an important role in controlling translation initiation. The activity of eIF4E protein is regulated by family of repressor 4E-binding proteins (4E-BPs). Linking these proteins to eIF4E is regulated by their phosphorylation state. For the release of 4E-BP1 from eIF4E, phosphorylation must occur at four phosphorylation sites (Thr37, Thr46, Ser65 and Thr70). The study also covers some of the other events that occur in the mTOR pathway.