Depression is the most common mental disorders and the number of cases is increasing. Nowadays, it is estimated that depression affects about 6% of the population . Currently used antidepressant drugs do not always provide the desired result and in many patients occur treatment-resistant depression.

Results from clinical studies suggest that zinc deficiency may be an important risk factor for depressive disorders as well as a factor decreasing the effectiveness of antidepressants. Moreover, according to recent studies, depression can be associated with changes in the level of zinc in the brain and dysfunctions of proteins responsible for maintaining normal levels of zinc in the brain.

The main goal of this project is to investigate whether zinc deficiency is an essential variable in the induction of resistance to antidepressant drugs. Part of this project is attempt to develop an animal model of treatment-resistant depression. Research will be conducted on rats, which will be subjected to the olfactory bulbectomy and zinc deficiency simultaneously. Then, using a variety of behavioral tests we will determine whether antidepressants could reverse the depressive-like behavior induced by combinations of these two procedures. In the second step, we will determine the influence of these procedure and antidepressant treatment on the expression of proteins associated with signaling pathways involved in the pathophysiology of depression and mechanism of antidepressant drug action.