Depression after stroke occurs in about 30% of patients. Post-stroke depression is associated with an increased risk of death, functional disability and cognitive decline. Results of the experimental studies suggest that systemic inflammation can effect mood and trigger depressive symptoms. The goal of this project is to determine a relationship between systemic inflammation and depression after stroke. The project will use immunological, molecular and radiological methods to elucidate an impact of systemic inflammation on post-stroke depression. Levels of circulating pro-inflammatory molecules, gene expression pattern and production of inflammatory mediators after stimulation of immune cells will be compared between stroke patients with depression and patients without depression. Moreover, an activity of the vagus nerve that conveys information from the immune system to the central nervous system will be assessed using functional magnetic resonance imaging. The project should shed a light on mechanism responsible for post-stroke depression. Better understanding how immune systems influences mood can be helpful for planning new therapeutic strategies in patients with post-stroke depression.