

DESCRIPTION FOR THE GENERAL PUBLIC

According to the World Health Organization, epilepsy is defined as a chronic brain dysfunction of varying etiology, characterized by recurrent seizures. Analysis of the transcriptome revealed increased *Ttyh1* gene expression in the hippocampus after the induction of status epilepticus in the rat model of epilepsy *in vivo*. In physiological conditions TTYH1 protein is abundantly expressed in neurons in larger vesicles surrounding nuclei and in smaller vesicles along neurites in the form of dot-like structures. TTYH1 immunoreactivity increases in the CA1 region and the molecular layer of the dentate gyrus of the hippocampus after status epilepticus induced by electrical stimulation of the amygdala in rats. Mossy fiber sprouting in the molecular layer is frequently associated with epilepsy, therefore TTYH1 protein can participate in aberrant synaptic plasticity. The aim of this project is to analyze the interaction between regulatory elements of *Ttyh1* gene promoter and transcription factors and to investigate the activity of the promoter fragments. Better insight into unknown mechanism underlying regulation of *Ttyh1* gene expression, may be important to understand the role of studied gene in epilepsy.