

Topic: MicroRNA, epilepsy and brain development

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Description: Epilepsy is a neurological disorder characterized by recurrent seizures that affects 1% of the population worldwide. Despite the active research, current anti-epileptic drugs are unable to treat the cause of epilepsy, only suppress its symptoms. Therefore, microRNA regulation has lately become the leading topic in epilepsy research aspiring to novel diagnostic and therapeutic approaches. Micro RNA (miRNA) is a short non-coding RNA that regulates gene expression on the post-transcriptional level and doing so, governs processes essential for brain function and development. This project will be focused on the analysis of miRNA involvement in epilepsy with onset in the developing brain, which is associated with aggravated progress of the disease. Crosstalk between miRNA and epilepsy in brain development will address three major aims employing combination of contemporary analytical approaches:

1. Identification and quantification of miRNA expression in models of early life seizures
2. Analysis of miRNA function and its effect on excitability in primary neuronal cultures
3. Testing of miRNA effect on seizures and epilepsy development in animal models