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Thesis title :
Astrocytic contribution in cumulative effects of repeated mild traumatic brain injury in pediatrics

Keywords : traumatic brain injury, astrocyte, aquaporin, inflammation, gap junction

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Abstract
Mild traumatic brain injury (mTBI) is common in children and adolescents and is frequently associated with a high risk of long-term disabilities and difficulties in society integration. Molecular and cellular consequences of single and repetitive mTBI are not known in pediatric population and there is no treatment available. The proposed study will be unique in its ability to evaluate the role of the astrocyte-neuron communications in behavioral dysfunctions after single and repeated mTBI in juvenile mouse model at postnatal 17 days. We will investigate the involvement of the astrocytic AQP4 in dysfunctions of the synaptic plasticity and behavioral outcomes (memory, anxiety) after mTBI. We will also define the timing between two mTBI events to observe a cumulative effect on behavior dysfunctions. We strongly believe this study will be useful not only for improved understanding of juvenile mTBI, but will also illuminate on new therapeutic potentials and biomarkers.

Qualification required
Background in neuroscience