Dear Editor,

We would like to submit the current manuscript "MeCP2-mediated cortical synaptic plasticity and its implication in motor impairments" for your consideration to be published in your journal.

Rett syndrome, a group of severe neurodevelopmental disorders in females, leads to multiple neural dysfunctions and lacks effective treatment approaches. Among all clinical manifestations, gradual loss of acquired motor function is one early-onset symptom and has drawn our interests. According to the known role of motor cortex in motor regulation, we move on to discuss current knowledge regarding Rett syndrome and neuropathology in motor cortex.

After a systemic review of published literatures, we found that both human and animal studies are suggesting the structural and functional deficits of synaptic plasticity upon MeCP2 mutation, which is the major cause of Rett syndrome. In particular, the normal excitatory-inhibitory (E/I) homeostasis of motor cortex was interrupted under disease condition, leading to dysregulated motor functions. Based on such circuitry hypothesis, we also propose the application of physical exercise and neuromodulation approaches to relive motor symptoms.

We believe this review article will fit the scope of this journal as it can benefit both basic and clinical study to better understand motor disorders in Rett syndrome, and to develop more efficient and safer strategies such as physical exercise, to improve patient’s life quality.

This manuscript has been edited by a native English speaker who has neuroscience professions. We look forward to your precious comments.

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