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Daqing Guo* (dqguo@uestc.edu.cn), **Mingming Chen**, **Yang Xia**, **Yangsong Zhang** and **Dezhong Yao**. *Mesosopic Neural Field Model of Absence Epilepsy*.

Epilepsy is a general term for conditions with recurring seizures. Absence seizures are one of several kinds of seizures, which are characterized by typical 2–4 Hz spike-and-slow wave discharges (SWDs). Recent data suggested that the basal ganglia (BG) might regulate absence seizures, but the related biological mechanisms are still unclear. Here we establish a mesoscopic neural field model for the basal ganglia-corticothalamic network to investigate the roles of BG in controlling absence seizures. Using this model, we demonstrate that the typical absence seizure activities can be controlled and modulated by the direct GABAergic projections from the substantia nigra pars reticulata to either the thalamic reticular nucleus or the specific relay nuclei of thalamus, through different biophysical mechanisms. Under certain conditions, these two types of seizure control are observed to coexist in the same network. Moreover, we also observe that both increasing the activation of neurons in globus pallidus externa and enhancing the coupling strength of the inhibitory pallido-cortical pathway can suppress the bilaterally synchronous 2–4 Hz SWDs during absence seizures. Overall, these findings highlight the multiple functional roles of BG in regulating absence seizure. (Received September 25, 2017)