Penn Medicine
Orphan Disease Center

CDKL5 Program of Excellence
Pilot Grant Program

Application Title: Targeting the chloride-importing and exporting transporters in CDKL5 disorder

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CDKL5 disorder frequently manifests as a constellation of neurological deficits including severe early-life epilepsy, mental retardation, and autism. Although mouse models of CDKL5 disorder do not appear to recapitulate the severe seizure phenotype observed in patients, we propose to investigate more subtle indicators that may contribute to over-excitation of neurons and eventually seizures and epilepsy. We are investigating the expression and function of “inhibitory” proteins that are responsible for preventing neurons from firing in a novel mouse model of CDKL5 disorder. We hypothesize the function of inhibitory proteins is altered in CDKL5 disorder, which may cause neurons to fire more rapidly and lead to over-excitation in the brain. Additionally, we will examine whether modulating the function of inhibitory proteins is a viable therapeutic strategy for patients with CDKL5 disorder.