CDKL5 Program of Excellence
Pilot Grant Program

Application Title: Understanding CDKL5 Expression Pattern by RNAScope in Developing Mouse and Human Glia

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During development of the human brain, intricate interactions must take place between cells called neurons, astrocytes and oligodendrocytes that are important for normal neurological function. Mutation of the gene CDKL5 results in seizures and severe problems in brain function so it is important to understand exactly where CDKL5 works in the normal developing brain. We can look at expression of the gene and protein for CDKL5 using samples collected during development to better understand this issue. This grant will focus on oligodendrocytes and astrocytes, collectively called “glia,” which have import support functions for neurons and the axons that comprise the communication highways of the brain. Mutations of other genes in glia cause seizures. We will use a cutting edge technology called “RNA scope”, which looks in detail at the way the CDKL5 gene is turned on in developing glia in the brain. We will also look at the protein for CDKL5 using new tools created by Loulou Foundation investigators. Together, these studies will provide important perspectives on the precise ways that CDKL5 is active in developing glial cells; information that can be used to better understand its function and, more importantly, how to target new therapies for children with this condition.