CASE STUDY

Neuroinflammation in epilepsy

Who: Alan Dombkowski, PhD
Wayne State University School of Medicine, Department of Pediatrics

Dr. Dombkowski is an Associate Professor in the Department of Pediatrics and a member of the Translational Neurosciences Program at Wayne State University. His research program centers on the integration of functional genomics with computational methods to identify molecular mechanisms of disease onset and progression. The long-term goal of his laboratory is to identify new therapeutic targets for treatment of intractable pediatric epilepsy by applying these methods to uncover cellular events that lead to seizures originating from malformations of cortical development. He received his Ph.D. in Pharmaceutical Chemistry from the University of Michigan.

nCounter® Assay selection:

nCounter Human Neuroinflammation Panel

Project Summary:

Many cases of pediatric epilepsy are pharmacoresistant and do not respond to conventional anti-epileptic medications. These children have recurrent seizures that eventually cause impaired cognitive ability and diminished quality of life. There is great need to develop new approaches to treat intractable epilepsy in children. Mounting evidence indicates that neuroinflammation is an important contributor to the development of repeated seizures in pediatric epilepsies. To enable the identification of new therapeutic targets, we must fully characterize neuroinflammatory signaling pathways associated with epileptogenesis. We plan to use the Neuroinflammation Panel to measure immune/inflammatory gene expression and related pathways in human tissue that was surgically resected to treat pharmacoresistant epilepsy. Our long-term goal is to use this knowledge to advance personalized medicine for the treatment of pediatric epilepsy.

"Our goal is to identify new therapeutic targets because current medications for treating epilepsy are often ineffective. A lot of interest has been focused on neuroinflammatory pathways and whether those could be targeted to disrupt seizure onset processes. Some of the data that our group and others have generated and published in the last couple of years suggest this might be a possibility. We're hoping that these outcomes and analyses will lead us towards promising targets to investigate for anti-epileptic treatment."

Alan Dombkowski, PhD

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