Investigator: Anne Berg, PhD **Grant Award Year:** 2018

Amount of PERF™ Grant: $200,000

Investigator Institution: Ann & Robert H. Lurie Children's Hospital

Project Title: Natural History of Early Life Epilepsies: Supporting the Translation from Scientific Discovery to Clinical Implementation

Project Description: This project will provide a critical resource for performing natural history studies and measuring key outcomes in children with early life epilepsy.

Project Goals/Objectives: The approach is designed and intended to give voice to the parent perspective regarding seizures and the many morbidities that affect children with early life epilepsies for the purpose of developing rigorous, reliable, sound means of assessing important endpoints and performing natural history studies based on parent-reported measures. This will lead to valuable information for parents, the development of educational materials for providers, and provide the needed information about the natural history and outcomes of these rare disorders required by the FDA to facilitate the design of efficient and effective randomized trials to test treatment that may improve seizure control and a variety of morbidities in affected children.

Outcome of Research: As the project developed, the focus shifting from a “Natural History” study to identifying measures that are appropriate to the population (relevant, right level, and sensitive to meaningful change). The data from the Natural History Project are still in active use (Dec 2022) as the PI and others are using those data for analysis and as preliminary data to develop new initiatives in rare genetic diseases associated with epilepsy and other neurodevelopmental disorders.

Subsequent Funding ☐ None to report.

Year: not specified
Funder: Families SCN2A
Amount: a small contract, amount not specified
Project: Analyze and report the data collected on SCN2A probands in the Simons Foundation Autism Research Initiative. This was considered work part of the Natural History Project.

Year: Not specified
Funder: Families SCN2A
Amount: 2-year contract, amount ot specified
Project: To implement a longitudinal, two-year trial readiness study for children with SCN2A-DEE. The study was largely informed by the work performed with the PERF™ award.

Subsequent Publications ☐ None to report.

Berg AT, Wusthoff C, Shellhaas RA, et al. Immediate outcomes in early life epilepsy: A contemporary account. Epilepsy Behav. 2019;97:44-50. doi:10.1016/j.yebeh.2019.05.011

Berg AT, Gaebler-Spiro D, Wilkening G, Zelko F, Knupp K, Dixon-Salazar T, Villas N, Meskis MA, Harwell V, Thompson T, Sims S, Nesbitt G. Non-seizure consequences of Dravet Syndrome, KCNQ2-DEE, KCNB1-DEE, Lennox-Gastaut Syndrome, ESES: a functional framework. Epilepsy & Behav. 2020 • DOI: 10.1016/j.yebeh.2020.107287

Berg AT, Palac H, Wilkening G, Zelko F, Schust S.. SCN2A-Developmental Epilepsies and Encephalopathies: Challenges to trial-readiness for non-seizure outcomes. Epilepsia 2020 December online: https://doi. org/10.1111/epi.16750

Van Nuland A, Ivanenko A, Meskis MA, Villas N, Knupp KG, Berg AT. Sleep in Dravet syndrome: A parent-driven survey. Seizure 2021 85:102-110.
• DOI: 10.1016/j.seizure.2020.12.021

Berg AT, Mahida S, Poduri A. KCNQ2-DEE: developmental or epileptic encephalopathy? Ann Clin Trans Neurol 2021 8 :667-676
https://onlinelibrary.wiley.com/doi/10.1002/acn3.51316 (open access)

Kaat A, Zelko F, Wilkening G, Berg, AT. Evaluation of the Aberrant Behavior Checklist for Developmental and Encephalopathic Epilepsies. Epilepsy & Behavior, 2021, DOI: 10.1016/j.yebeh.2021.107958

Beck VC, Isom L, Berg AT. Gastrointestinal symptoms and channelopathy-associated epilepsy. J Pediatr. 2021 https://doi.org/10.1016/j.jpeds.2021.06.034

Berg AT, Coffman KA, Gaebler-Spira, D. Dysautonomia and functional impairments in rare developmental and epileptic encephalopathies: The other nervous system. Dev Med Child Neurol 2021. DOI: 10.1111/dmcn.14990

Van Nuland A, Reddy T, Quessam F, Vassalli J-D, Berg AT. PACS1-Neurodevelopmental Disorder: Clinical features and trial readiness. Orphanet, 2021. https://rdcu.be/cxHzC

Berg AT, Kaat AJ, Gaebler-Spira D. Measuring the inch stones for progress: Gross motor function in the developmental and epileptic encephalopathies. Epilepsy Behav. 2022 Dec;137(Pt A): 108953. doi: 10.1016/j.yebeh.2022.108953. Epub 2022 Nov 9.

Berg AT, Kaat AJ, Zelko F, Wilkening G. Rare diseases- rare outcomes: Assessing communication abilities for the developmental and epileptic encephalopathies. Epilepsy Behavior. 2022 Feb 11; 128:108586. doi:10.1016/j.yebeh.2022.108586.

Conference abstracts and presentations in 2023 only:

1	Measuring Inchstones of Success for Those with Profound Intellectual and Multiple Disabilities: From FDA Guidances to Community Initiatives. Child Neurology Society Annual Meeting, October 2023, Vancouver, British Columbia, Canada. (Symposium talk)
2	Berg AT, Lerner J, Millichap J, L'Italien G, Coric V, Potasham M. Functional Impairments in Patients with KCNQ2-DEE: Associations Among Key Clinical Features. Poster # 2.451. Presented at the Annual meeting of the American Epilepsy Society, December, 2023, Orlando FA.
3	Non-Seizure Outcomes in DEEs: Assessing Their Burden and Impact. CME course, Beyond Seizures: The Evolving Standard of Care in Developmental and Epileptic Encephalopathies. Orlando FL, Dec 1, 2023.