EXECUTIVE SUMMARY

Diffuse intrinsic pontine gliomas (DIPG) are the most common brainstem tumors in children, representing approximately 75-80% of all pediatric brainstem tumors. [1] Approximately 200-300 patients are diagnosed with DIPG in all of North America and Europe. [1,2] DIPG accounts for 10-15% of all new pediatric brain tumor diagnoses and is the leading cause of brain tumor-related death in children.[1] The median age at diagnosis is 6 to 7 years[2-4] and prognosis for patients with DIPGs remains dismal with a median survival of less than 1 year. Although radiotherapy does improve neurological function and survival by 2-3 months, no effective chemotherapeutic regimens are currently available.[1,2] Achieving cure for all children with DIPG remains a major goal of pediatric neuro-oncology. In this application, **we propose the expansion of the International Diffuse Intrinsic Pontine Glioma Registry which is now the largest and most comprehensive collection of data including clinical, radiologic and pathologic data linked to a bioinformatics repository of molecular data from a diverse cohort of DIPG patients available to researchers throughout the world.** With the generous support of a coalition of pediatric brain tumor foundations from the DIPG Collaborative, and collaborations with 106 academic medical centers in the US, Canada, Australia, New Zealand, Egypt, Brazil, Chile, China, Argentina, India, Japan, Saudi Arabia, United Arab Emirates, and Lebanon, the Registry is growing exponentially. From April 2012 to August 2018, 885 patients diagnosed with DIPG have been enrolled from 106 collaborating institutions. The specific aims include: 1) To continue recruitment of patients diagnosed with DIPG in the International DIPG Registry to greater than 1,000 patients and further expand internationally; 2) To provide a repository of integrated data set compromised of clinical, pathologic, radiologic and molecular features to the clinical research community for promotion of hypothesis generation and analysis and maintain follow up on all cases; 3) To facilitate conduct of autopsies and sharing of fresh tissue for establishment of in vitro and in vivo models by investigators to be shared with investigators around the world; 4) To expand the bioinformatics repository of existing molecular data on DIPGs that can be linked to patient information in the registry through the Links and Viva platform to include prospective data; 5) To develop a program focused on quality of life through a longitudinal study where patient and/or parent proxy-dyads who enroll on the International DIPG Registry will complete Health related quality of life measures at specified time intervals and aid in supportive management; 6) To broaden collaborations among investigators for hypothesis-driven research studies through the registry that will ultimately lead to better classification and more effective treatment of patients with DIPG. In the next year, the International DIPG Registry investigators will promote robust collaborative research projects on all aspects of DIPG, and will continue to make the International DIPG Registry data available to external investigators after review of the proposed research by Scientific Advisory Committee (SAC). **Our long-term goal is to expand on the highly collaborative, international, hypothesis-driven research infrastructure to continue to support a wide spectrum of interdisciplinary and translational projects in DIPGs for all investigators**. The data collected form a research continuum from basic biology to clinical practice that will ultimately address our primary goals of a) understanding the biology of DIPGs, b) developing more effective therapies and c) developing innovative approaches to diagnosis, response assessment and multidisciplinary

treatment and follow-up that will improve patient outcome in addition to maximizing quality of life.