

**Project title: Integration of treatment strategies and molecular diagnosis for childhood cancers in Taiwan**

**Integration of Treatment Strategies and Molecular Diagnosis for Childhood Cancers in Taiwan**

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According to the Taiwan Cancer Registry, the age-standardized rate of childhood cancer in Taiwan has been increasing at a rate of 1~1.2% per year over the last 2 decades. More children are lost to cancer than any other childhood diseases combined. However, a majority of children with cancer can be cured with proper treatment nowadays, adding decades of life years. In view of the declining birth rate in Taiwan, the issue of childhood cancer care demands immediate attention and action. Since 2016, we have pursued the following three aims with the support from the MOHW:

1) Develop uniform treatment strategies and provide sustained support for standardized molecular diagnostic tests for childhood brain tumor, and initiate the first clinical trial of upfront chemotherapy in combination with anti-GD2 immunotherapy in high-risk neuroblastoma;

We aim to integrate molecular parameters and clinical risk factors so as to provide up to date adaptive optimal treatment for different risk subgroups of patients. We have analyzed 52 cases of medulloblastoma combining pathological diagnosis with gene profiling and classified them into SHH, WNT, Group 3 and 4. After several multidisciplinary meetings, a consensus has been reached for the treatment regimens based on molecular subtypes of medulloblastoma. As to the high risk neuroblastoma, we have developed a treatment protocol for a pilot clinical trial combining dinutuximab with upfront chemotherapy. The protocol has been presented and discussed at TPOG meetings. We plan to submit it to T-FDA for IND and for CIRB approval.

2) Establish and maintain the clinical database for childhood brain tumor and neuroblastoma patients enrolled on TPOG protocol and provide bioinformatic support;

We have set up a prototype for "Taiwan Pediatric Cancer Web-based BioPlatform" to capture childhood brain tumor data including clinical data, medical images, biobank linkage or specimen database, consensus standard treatment of pediatric cancers (pediatric brain tumors, neuroblastoma, and other cancers), the archiving and management of the biological database, and biostatistics. As to the childhood cancer biobank, we have set up the standard of operation for sample collection and shipment, and are in the process of application for NHRI Biobank. Upon its approval, it will be followed by CIRB application. Through the establishment of the infrastructure and