CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP140258

Project Title:
The Intersection Between Childhood Cancer and Congenital Anomalies: Identifying Novel Cancer Predisposition Syndromes

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
Baylor College of Medicine

Lay Summary:

One of the strongest risk factors for childhood cancer is being born with a birth defect. This risk is present not only among children with major congenital malformations, but also among those with minor birth defects. In fact, more than 10% of childhood cancers may be attributed to having a birth defect. Exploring the intersection of birth defects and childhood cancer is likely to provide valuable insights into what causes cancer and may also provide information that can be used to improve screening strategies in cancer prevention clinics. As an estimated 7.9 million children worldwide are born with a congenital malformation each year, the public health implications of identifying why some of these children develop cancer are substantial. In spite of these recognized patterns, much work remains in discovering novel birth defect-childhood cancer combinations and in characterizing cancer predisposition syndromes. In practice, identifying birth defect-childhood cancer patterns is challenging because large population-based studies with sufficient numbers of birth defects are necessary to allow for meaningful estimation of childhood cancer risks. Because of this, we will leverage high-quality data from the Texas Cancer and Birth Defects Registries with information on over 7 million births to: 1) find novel birth defect-childhood cancer associations and 2) create a family-based study for genomic analyses. We will then utilize state-of-the-art techniques in DNA sequencing available at the Human Genome Sequencing Center at Baylor College of Medicine to thoroughly study all of the genes from families with individuals with birth defects and childhood cancer. Our overall goal is to identify novel genes which when altered increase the risk of childhood cancer. This is a unique and timely opportunity to aid in the discovery of novel cancer susceptibility syndromes. Children with these disorders will benefit from targeted cancer screening and surveillance programs.