Update on Neuroblastoma Translational Research at Children's National Hospital

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Over the past year the laboratory at Children's National Hospital has continued their efforts to validate the induction of immunogenicity (provoking an immune response) in neuroblastoma. Thanks to support from the Catherine Elizabeth Blair Memorial Foundation, this work has significantly progressed from our findings in murine models to human tumor cells and their corresponding immune cells from patients.

Conceptually, if a tumor cell can be made to be seen as foreign to the patient's immune system, the tumor will be rejected. Our investigations have been focused on replicating experiments targeting the MYC oncogene (the gene that our laboratory showed shields neuroblastoma from the immune system) in human tumor cells. By suppressing the MYC oncogene with small molecule inhibitors, our early studies show that the human tumor cells become highly visible to human immune cells that are activated against them. These results match our prior findings in murine models in which the neuroblastoma tumor cells become visible to the immune system. This consistent response across testing models is the first step toward creating a vaccine against the human tumors.

Overall, this work is the pre-imminent translational step to advance toward clinical trials. The ultimate goal is to develop a therapeutic whole cell vaccine treatment that will allow the patient's own white blood cells to identify and eradicate their neuroblastoma tumors or to create potent immune cells (T-cells) in the laboratory that will target and kill the patient's tumors.