Accelerating Research Towards Neuroblastoma Treatments

November 2021

Translation of Findings to the Human Cell and Beyond

Over the past year and under the direction of Dr. Tony Sandler and Dr. Marie Nelson, the research team has continued their efforts to validate the induction of immunogenicity (provoking an immune response) in neuroblastoma in human cells. Specifically, they have worked to replicate 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 showed that the human tumor cells become highly visible to human immune cells that are activated against them. Over the next year the team plans to continue experiments to confirm these initial findings and ensure a consistent response across testing models.

Additionally, the research team will begin further testing the other two components of their murine tumor models. This includes blocking the ApoE checkpoint currently inhibiting the delivery of the whole cell vaccine curative effect in other tumor models. This work aims to increase vaccine efficacy in multiple tumor models. Finally, they will test the use of the CD24Fc fusion protein in an attempt to reduce immune-related adverse events such as potentially life-threatening inflammatory side effects in other organs. This step is essential to ensuring that the whole cell vaccine clinical trials will be as safe as possible for patients.

Our ultimate goal for the next year is to ensure a consistent response between the murine models and human cell and blood lines. Our three study protocols of the neuroblastoma whole cell vaccine approach, suppressing the MYC oncogene, blocking the ApoE checkpoint, and using DC24Fc to reduce adverse immune response, are critical to confirming this treatment as an effective method that will eradicate neuroblastoma tumors, avoid harmful side-effects, and give kids the best possible chance to live a life free from cancer. This translational work is the projected final step before designing a clinical trial in patients with our colleagues at the Center for Cancer and Blood Disorders.