

Program: Targeting PRL2 in T cell Acute Lymphoblastic Leukemia

Speaker: Yan Liu, PhD, Associate Professor, Pediatrics, IU School of Medicine

Introduced by: Alison Brown

Attendance: 112

Guests: Midge Decker, Susan Fordyce, Mary Grevey, Laura Oxford, Lynn Prester, Katherine Strube, Becky L(?) - Sumner

Scribe: Russell Judd

Editor: Carl Warner

The talk today was given by Yan Liu, PhD, who is Assistant Professor of Pediatric and Molecular Biology and a St. Baldrick's Scholar at the Herman Wells Center for Pediatric Research at Riley Hospital and Indiana University. Dr. Liu discussed some of his laboratory research on acute leukemia, adult malignancy, and new treatments for these diseases. He began by saying that successful drug development really depends on good basic research and the biological basis of disease. He discussed the importance of stem cells and their development of all types of blood cells. Leukemia is a stem cell disease. Sometimes stem cells become resistant to chemotherapy or other therapies. In the United States in 2018, there were approximately 11,000 new cases of cancer in children. Leukemia and cancer of the bone marrow account for 30% of all cancers in children. Acute lymphocytic leukemia is the most common type of blood cancer in children. PRL2 is an enzyme that is highly expressed in some subtypes of leukemia, and it seems to promote the growth of malignant stem cells. In the laboratory, Dr. Liu and his team worked with mice and found that giving a PRL2 inhibitor to the mice resulted in a lower incidence of leukemia and much better survival. He is hopeful that using a PRL2 inhibitor in a clinical trial could be undertaken soon.

The second part of Dr. Liu's talk was in regard to the gene TP53, a master tumor suppressor. This gene was discovered 40 years ago and it is the most studied gene of all time. The presence of a mutant form of p53 is associated with an increased risk of de novo and treatment related blood cancers such as leukemia and myelodysplastic syndromes. This mutant form of p53 affects 10-15% of adults older than 65 years. Myelodysplastic syndromes are a group of disorders caused by poorly formed blood cells or ones that do not work properly in the bone marrow, may lead to bone marrow failure, and often progresses on to acute myelogenous leukemia. The outcome is usually poor. The use of an agent to kill mutant P53 cells improves survival in mice. This is another interesting novel potential therapy needing human trials.

Many thanks to Dr. Liu and his discussion about leukemia, adult tumors, and new interesting treatments that are being developed in his laboratory.

Dr. Yan Liu

