Washington University in St. Louis
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CYTOKINES-INDUCED-MEMORY-LIKE NK CELLS WITH REDUCED NKG2A CHECKPOINT SIGNALING

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Background: Natural Killer (NK) and T cells are the primary immune cells being explored for cancer immuntherapy. NK cells are relatively short-lived, making the therapy less susceptible to some of the side effects currently associated with using T cells for immunotherapy. Unlike T cells, NK cells are different in that they are part of the innate immune system and can recognize cells in the absence of antibodies and MHC signaling to increase speed of the immune reaction. However a remaining issue with NK cells are the inhibitory signals that are expressed on the cell surface and control cell activation. NK cells have the potential to be highly effective tools in treating cancer, however two essential limitations are the efficiency of cell expansion during adoptive transfer and the inhibitory signals that control NK cell function.

Technology Description: The technology is based on the method of using memory-like NK cells as a therapeutic for cancers such as AML. Using interleukin signaling as an activator, the cells then differentiate into cytokine-induced memory-like (CLIM) NK cells with potent anti-tumor properties. Additionally, inhibitory signals from receptor NKG2A are reduced to improve clinical responses. This technology represents a hugely promising therapeutic opportunity by presenting a novel method for concurrent production of CIML NK cells with the elimination of inhibitory signaling to create highly effective anti-tumor responses. These cells are currently being used in early phase clinical trials for acute myeloid leukemia (AML) patients with promising results.