Docket #: S19-505

Engineered Cytotoxic T Cells and CD200 Blockade to Enhance Anti-Tumor Activity

Engineered cytotoxic T cells are a promising class of cell therapies. These living drugs are capable of selectively killing blood cancers, such as acute myeloid leukemia (AML), and delaying its progression. In addition to engineering the T cells, we have found that upregulated CD200 expression on tumor cells impairs degranulation and confers resistance to killing. This is due to the cytotoxic T cells expressing the cognate receptor CD200R1, which facilitates an inhibitory signal upon binding to CD200. CD200 blockade with high affinity antibodies can enhance the anti-tumor activity of the engineered cytotoxic T cells. Furthermore, CD200 blockade alone can also assist endogenous cytotoxic T cells in mediating killing. CD200 expression could also be a biomarker to guide treatment decisions.

Applications

- CD200 blockade with and without engineered cytotoxic T cells for treating blood cancers
- Prognostic marker for treatment of blood cancers

Advantages

- Treatment modality to overcome resistance against cytotoxic T cells
- Combination synergy between antibody blockade and cell therapy

Publications

- Cieniewicz, B., et al. Engineered type 1 regulatory T cells designed for clinical use kill primary pediatric acute myeloid leukemia cells. *Haematologica* 2020.

Patents

- Published Application: WO2022036116
- Published Application: 20230285560

Innovators

- Maria-Grazia Roncarolo
- Alma-Martina Cepika
- Molly Kathryn Uyeda
- Brandon Cieniewicz

Licensing Contact

Eileen Lee

Email