# Engineered regulatory T Cells for the treatment of GVHD and inflammatory diseases

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**The Innovation: A novel cell based therapy to combat disordered inflammation. Using a novel method, $CD4^+$ and $CD8^+$ regulatory T cells have been engineered to over express both FOXP3 and Helios without suppression of either product. Efficacy of the eTregs has been shown *in vitro* and in a humanized model of graft versus host disease (GVHD).**

## Applications:

- Biologic for the treatment of GVHD in organ and stem cell transplant patients
- Biologic for the treatment of diseases in which it is desirable to reduce inflammatory immune responses. Examples would include type I diabetes, multiple sclerosis, allograft/transplant rejection, inflammatory bowel disease, lupus, rheumatoid arthritis, and other chronic inflammatory diseases

## Advantages:

- The CD4+ and CD8+ eTregs exhibit stable expression, with about 98% of FOXP3+Helios+ cells retaining high FOXP3 and Helios expression 21 days post-transduction and 12 days *in vivo* in mice
- Can separate CD4+ and CD8+ cells if desired
- The novel method produces larger quantities of eTregs more rapidly by eliminating the need to isolate and expand populations of naturally occurring Tregs
- First reported generation of CD8+ Tregs with suppressive activity

**IP Status:** Provisional Patent Application filed July 9, 2019
U.S. Patent 11,160,832 Issued November 2, 2021
U.S. Patent application 17/488,702 filed September 9, 2021
EPO and Canadian Applications filed January 2022.

**Publication:** Co-expression of FOXP3 and a Helios isoform enhances the effectiveness of human engineered regulatory T cells. A. Seng, et al; *Blood Advances,* Vol 4 (7), 1325-1339

**Licensing:** Children's Mercy, Kansas City and the University of Kansas seek to have discussions with companies that are interested in licensing and/or research collaborations.

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