

Dual-specificity IL233 Cytokine for Modulation of Organ Specific Inflammation

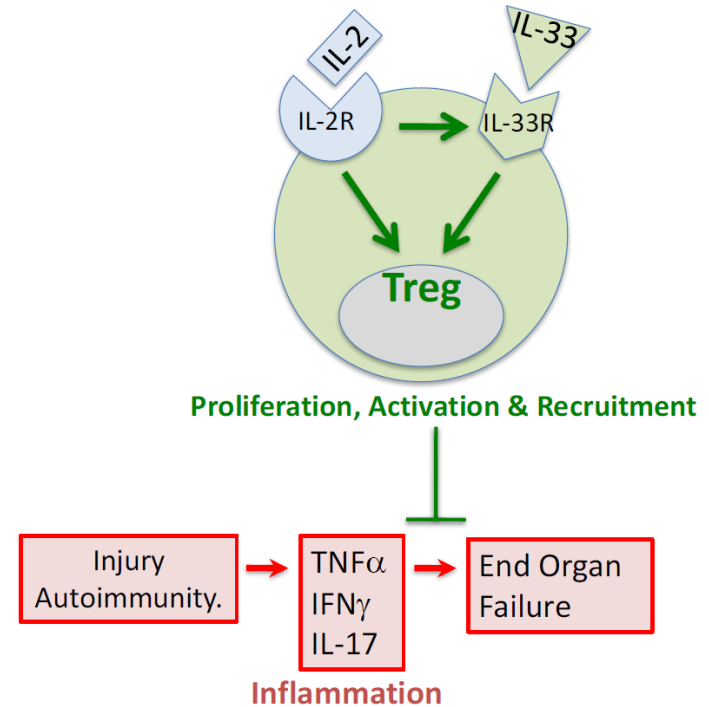
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LICENSING & VENTURES GROUP

IL-2 and IL-33

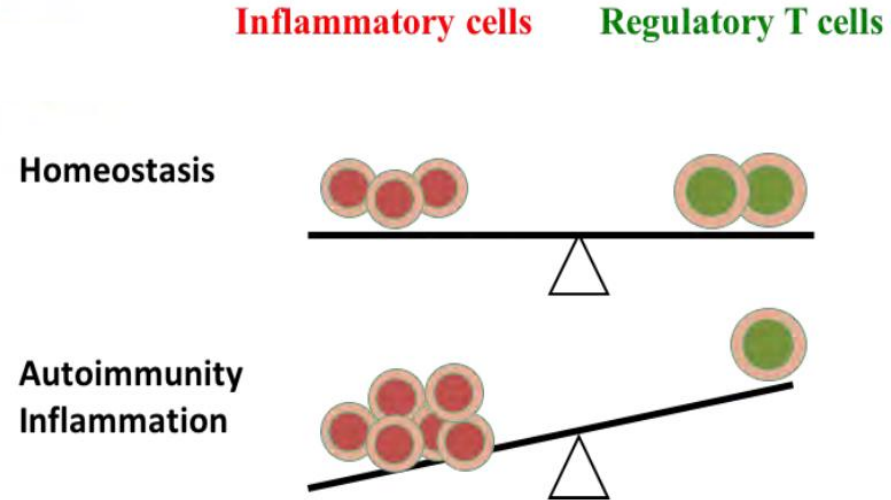
- **IL-2 is an important negative regulator of inflammation via regulation of Treg homeostasis and function**
- **IL-33 induces anti-inflammatory effects through resolution of pro-inflammatory Th1 and Th17 responses**
- **Clinical Problem:**
 - **Combination therapy of IL-2 and IL-33 is more specific and has fewer side effects than using either alone**



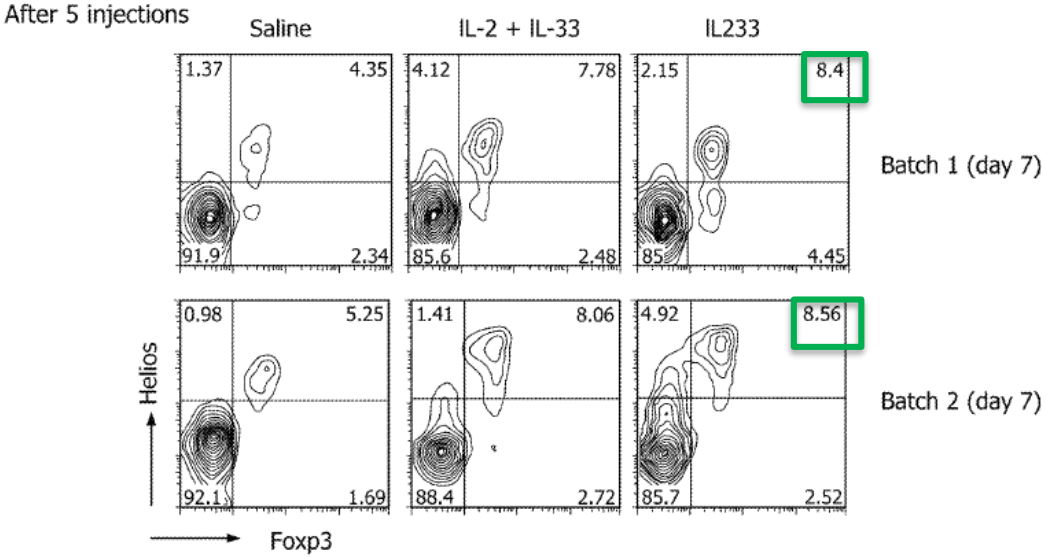
IL-233 hybrid cytokine

Solution: A novel cytokine, IL233, capable of activating regulatory T cells and successfully treating both chronic and acute inflammatory disease states

- Simultaneously promotes Treg and Th2 responses by suppressing Th1 and Th17 responses, while inhibiting activation of pro-inflammatory immune cells
- Can be applied to treatments for: diabetes, lupus, lupus glomerulonephritis, diabetic nephropathy, renal ischemia reperfusion, and obesity



Treatment with IL233 increases natural Tregs in mice

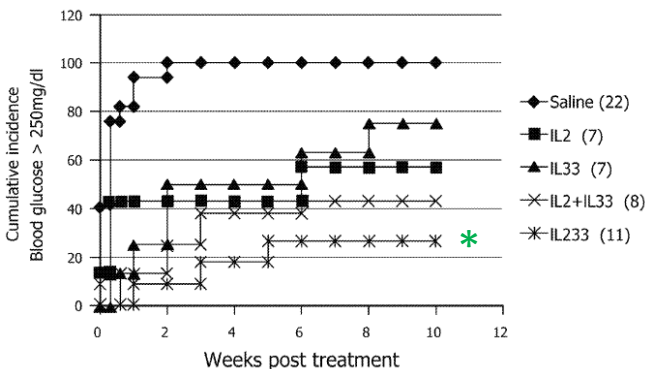


Peripheral blood: Gated on TCR+CD4+cells

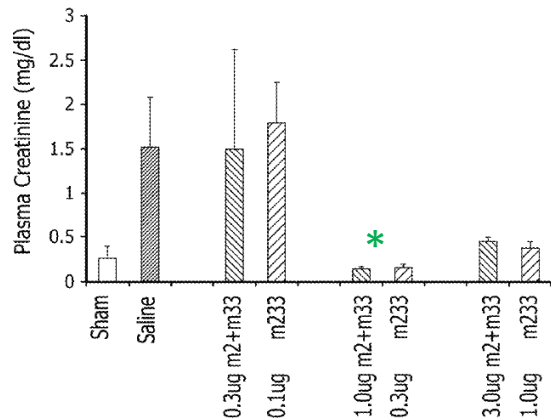
NOD mice were injected with 5 daily doses of 1 µg equivalent of a combination of IL-2 and IL-33 or IL233 and CD4+Foxp3+Helios+ cells were evaluated in the peripheral blood by flow cytometry.

Treatment with hybrid IL233 is more effective than either cytokine alone or combination

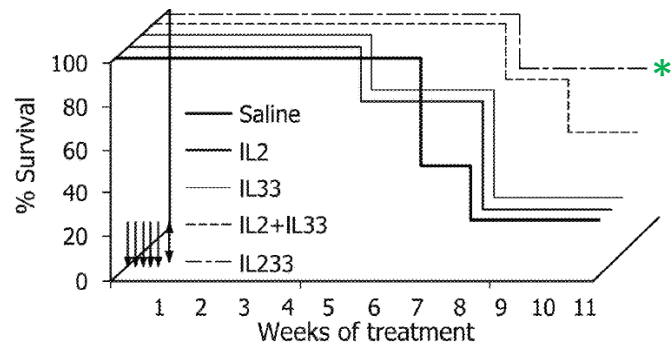
Type 1 Diabetes



Renal Ischemia Reperfusion



Lupus



Treatment with IL2, IL33, IL2+IL33 or IL233 in diabetic, renal injury, and lupus mouse model systems.

Relevant Publications & Intellectual Property

- J Am Soc Nephrol. 2017 Sep; 28(9):2681-2693. **Sharma R, et. al.**
- UVA Tech ID: SHARMA-FUSION
 - Title: Fusion protein comprising interleukin-2 and interleukin-33
 - U.S. Patent: 9,840,545 B2 published Dec. 12, 2017