Docket #: S20-001

Potent IL-2 Variants

Researchers at Stanford have designed, in silico, a series of new human IL-2 mutants that have biased actions on different immune cell subsets, and confer increased signaling potency compared to natural IL-2. Several of these super-agonists exhibit CD25-independence as shown by potent activation of signaling on CD25-negative cells, and so are biased to Teff and NK cells. Another variant exhibits enhanced CD25 dependence and is thus biased to CD25+ cells. IL-2 is a cytokine that plays a key role in the adaptive immune response and is an appealing target for therapeutic development. However, at clinically relevant doses it is highly toxic due to its pleiotropic actions on many different types of immune cells. New IL-2 proteins that improve the desired effects by narrowing IL-2 actions to particular immune cell subsets are needed. These variants offer the potential for use in cancer immunotherapy at low doses, as well as in autoimmunity.

Stage of Development
In vitro proof of concept

Applications

- Cancer immunotherapy
- Autoimmunity
- Transplantation (GVHD)
- Inflammation

Advantages

- Highly potent
- Cell type selectivity
- Enhanced safety

Patents

- Published Application: WO2021178833
- Published Application: 20220324934

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