



## Anti-CD40 Single-Chain Variable Fragment And Human IL-21 Fusion Protein (CD40SCFV-IL-21)

WARF: P210323W001

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### The Invention

UW-Madison researchers have developed a novel fusion protein for inducing Breg cell formation and a method for transforming any human B cell into an IL10-competent, functional Breg cell ex vivo at scale. The method uses a fusion protein made up of the single-chain variable fragment (ScFv) of anti-human CD40 and a full-length human IL-21. The researchers purify B cells from blood, treat the cells with a TLR9 agonist followed by the fusion protein or treat the isolated B cells with the TLR agonist along with the fusion protein. The resulting Breg cells can be used as possible treatments for a variety of autoimmune diseases. The inventors had to identify an antibody that binds and activates CD40, a cell surface receptor on B cells. IL21 has been shown to be involved in the induction of Breg formation from B cells. They fused the two proteins together but found that the fusion protein alone didn't induce formation of Bregs. They needed to either pretreat the cells with or add a TLR9 agonist along with the fusion proteins to get induction of Breg cells from B cells.

#### Tech Fields

- [Therapeutics & Vaccines : Biologics](#)
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