# Improving primary human NK cell expansion with a chimeric cytokine receptor

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## INVENTION NOVELTY

Natural Killer (NK) cells are innate lymphocytes with the ability to lyse tumor cells. One limitation of NK cells when encountering tumor cells is that they can't control their own proliferation and expansion to increase their numbers at the tumor site. Current approaches to increase NK cell numbers and stimulate NK-cell anti-cancer functions include systemic administration of recombinant cytokines (IL-15, IL-2, or IL-12) that exhibit systemic or local toxicity or constitutive expression of IL-15 in transduced NK cells. Researchers at UCSF have engineered NK cells with a chimeric cytokine receptor (CCR) that provides autocrine signaling through the secretion of IFNγ, which subsequently enhances NK cell proliferation and function to support NK cell anti-cancer immune response specifically at the tumor site while avoiding recombinant cytokine- related toxicity.

## VALUE PROPOSITION

- No CCR NK technologies exist that promote NK growth signals without exogenous cytokines
- Potential to overcome expansion issues of NK cells
- Reduces sensitivity of NK cells to exogenous IL-2
- Eliminates need for expansion of primary NK cells in vitro prior to infusion
- Eliminates the need to systemically administer IL-12 thereby reducing toxic effects of IL-12
- Targeted NK-cell activation at the tumor site

## PATENT STATUS

Patent Pending

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## OTHER INFORMATION

**KEYWORDS**

Natural Killer Cells, NK Cells, Tumor, Chimeric cytokine receptor

**CATEGORIZED AS**

- Medical
  - Disease: Cancer
  - Therapeutics

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