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Peptide Activation of T Cells for Cancer Immunotherapy

IP Status: Issued US Patent; **Application #:** 15/774,163

Antigenic Peptides Enhance Immune Response

Using peptides to recruit T cells and antibodies to tumor sites could change the landscape of cancer immunotherapy. A new technology uses antigenic peptides to stimulate the natural "sensing and alarm" function of resident memory T cells (TRM) at tumor sites in order to promote an immunostimulatory and effector environment. These activated TRM cells enhance the effect of current cancer immunotherapies by potently activating the body's innate and adaptive immune response against tumors by recruiting both chimeric antigen receptor (CAR) T cells and checkpoint blockade antibodies to the tumor site as well as promoting a potent local immunostimulatory environment. And because local TRM stimulation controls systemic immune system activation and recruitment, these methods could likely treat a broad range of diseases.

Activated TRM Cells More Effective and Potentially Safer

Stimulating TRM with peptides produces a safer and more effective response than conventional therapies. While checkpoint blockade antibodies can be effective in cancer treatment, they can also have serious—even fatal—side effects. Using activated TRM cells means using fewer potentially toxic checkpoint blockade antibodies. In addition, TRM activating peptides recruit CAR T cells to sites of desired efficacy.

BENEFITS AND FEATURES OF PEPTIDE ACTIVATION OF RESIDENT MEMORY T CELLS FOR CANCER IMMUNOTHERAPY:

- Enhances the effect of current cancer immunotherapies
- Fewer toxic side effects
- Recruits chimeric antigen receptor (CAR) T cells and checkpoint blockade antibodies to tumor sites
- Stimulates the immune system solely with peptides, even in the absence of microbial products or other adjuvants
- Activates the body's innate and adaptive immune response against tumors
- Could likely treat a broad range of diseases (e.g. arthritis, IBD, psoriasis, multiple sclerosis, hepatitis C virus, parasite infection, tuberculosis, allergies and atopy)

Phase of Development In vivo/animal studies

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