

Novel Murine T-Cell Receptors for Treating Metastatic Thyroid Cancer

Summary (1024-character limit)

Metastatic thyroid cancer can be resistant to current treatment options such as radioactive iodine therapy. Targeting thyroglobulin, a thyroid-specific antigen, as part of an adoptive cell therapy approach will allow for new therapeutic possibilities. Researchers at the National Cancer Institute (NCI) seek licensing and/or co-development research collaborations for novel T-cell receptors for the treatment of metastatic thyroid cancer.

NIH Reference Number

E-226-2014

Product Type

- Therapeutics

Keywords

- Immunotherapy, Metastatic, Thyroid Cancer, Human Thyroglobulin, TG, T-cell receptors, TCR, TCRs, Adoptive Cell Therapy, ACT, Yang

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

The occurrence of thyroid cancer has been increasing in the United States. For some patients, with particularly advanced and metastatic cancer, current treatments such as thyroidectomy and adjuvant radioactive iodine therapy can lead to poor outcomes. Hence, there is a need for new thyroid cancer treatments.

Researchers at the NCI have developed novel T-cell receptors (TCRs) to target thyroid cancer. They immunized HLA-A2+ transgenic mice to generate TCRs that recognize human thyroglobulin (TG). TG, a tissue-differentiation antigen, is only expressed in thyroid cancer and normal thyroid tissues. The anti-TG TCRs can be expressed in a patient's peripheral blood lymphocytes as part of adoptive cell therapy (ACT) to treat cancer. This discovery, along with hormonal therapy to replace normal thyroid function, can be

used to eradicate tumor cells.

The National Cancer Institute, [Surgery Branch](#), is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize novel T-cell receptors for the treatment of metastatic thyroid cancer.

Potential Commercial Applications

- Immunotherapy for metastatic thyroid cancer

Competitive Advantages

- Target specificity due to tissue-differentiation antigen that is only expressed in the thyroid
- Alternative treatment for patients with metastatic thyroid cancer that is resistant to the current standard of care

Inventor(s)

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Development Stage

- Pre-clinical (in vivo)

Publications

Kochenderfer JN, et al. B-cell depletion and remissions of malignancy along with cytokine-associated toxicity in a clinical trial of anti-CD19 chimeric-antigen-receptor-transduced T cells [[PMID 22160384](#)]

Kloos RT, Approach to the patient with a positive serum thyroglobulin and a negative radioiodine scan after initial therapy for differentiated thyroid cancer [[PMID 18463349](#)]

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/079,713 , Filed 14 Nov 2014
- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2015/060282 , Filed 12 Nov 2015

Related Technologies

- [E-149-2015 - Cancer-reactive T cells from Peripheral Blood](#)

Therapeutic Area

- Cancer/Neoplasm