Fred Hutch Cancer Center

Novel Cancer/Testis Antigen: T Cell Epitopes of Short H2A Histone Variants

Business Opportunity

Exclusive license
Sponsored research

Technology Type

Target

State of Development

Preclinical in vitro

Patent Information

US patent pending

Investigator

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Tech ID

20-134

Contact

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Brief Description

Short H2A histone variant epitopes commonly expressed in Diffuse Large B Cell Lymphoma to be used as immunotherapy targets

Technology Overview

By analyzing data from patients with a variety of cancers, Dr. Jay Sarthy's group at Fred Hutch Cancer Center have identified short H2A histone variants as endogenous oncohistones and novel cancer testis antigens. The identified variants in short H2A (sH2A) histone have the ability to bind to common HLA alleles, thus acting as excellent targets for immunotherapy. By comparing sH2A variants with canonical sequences, the inventors have identified sH2A variants that are frequently associated with cancers, and are prominent in diffuse large B cell lymphoma (DLBCL). Development of transgenic T-cell receptors specific for these epitopes can be utilized for CAR T cell therapy to control tumor growth. Potential for T cell immunotherapies utilizing these novel epitopes can be used not only in treating Non-Hodgkin's Lymphoma but could be utilized as treatment for multiple other cancers.

Applications

- Novel targets to treat a variety of malignancies, especially DLBCL
- Can be used in a wide variety of malignancies including uterine corpus endometrial carcinomas, bladder urothelial carcinomas and cervical squamous cell carcinomas and endocervical carcinomas
- sH2A derived peptides that bind human HLA might be an attractive target for cancer vaccination

Advantages

- sH2A variants are upregulated in tumor samples, but not in adjacent healthy tissue
- itopes have a high probability of binding common HLA alleles, making these promising candidates for T cell immunotherapies and vaccines.