Novel Neoantigen-Based Peptides and TCR for Cancer Immunotherapy

Tech ID: 33615 / UC Case 2023-197-0

TECHNOLOGY DESCRIPTION

There is a pressing need for innovative cancer therapeutics that can circumvent cancer cells evading the immune system and resistance to treatment. Conventional “neoantigens” are limited due to the low tumor mutation burden. Tumor-specific alternative splicing events will significantly enhance the repertoire of available antigen targets for effective immunotherapy.

Our isolated peptides have the potential to be developed into a novel cancer immunotherapeutic. They can be synthesized and modified to enhance stability and biological activity. These peptides can be presented by major histocompatibility complex (MHC) molecules on the surface of antigen-presenting cells (APCs), stimulating T cell receptors (TCRs) to induce an immune response

APPLICATION

Our peptides can be modified to enhance their stability and biological activity while preserving their TCR inducibility. Furthermore, they can be used to prime T cells in vitro or in vivo, or used in vaccinations, offering the potential for personalized immunotherapy.

STAGE OF DEVELOPMENT

We identified CD8+ T-cell clones specific for neoantigens derived from tumor-wide and conserved neojunctions in GNAS and RPL22, respectively. TCR-engineered CD8+ T-cells targeting these mutations conferred neoantigen-specific tumor cell eradication.

RELATED MATERIALS

- Tumor-wide RNA splicing aberrations generate immunogenic public neoantigens - 10/20/2023

PATENT STATUS

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OTHER INFORMATION

KEYWORDS

Neoantigen, Glioblastoma, T cell Receptors (TCRs), T cell priming, Vaccination, Immunotherapy

CATEGORIZED AS

- Medical
- Disease: Cancer
- Therapeutics
- Vaccines

RELATED CASES

2023-197-0

Patent Pending

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