Systems And Methods For The Preparation Of Peptide Receptive Mhc-I/Chaperone Complexes With Native Glycan Modifications

Tech ID: 33059 / UC Case 2020-251-0

BACKGROUND

Typically, peptide receptive MHC-I multimer reagents are prepared in bacterial (*E. coli*) culture. While this is efficient, it does not result in glycosylation of the MHC-I peptide fragments as is done in mammalian cells. As a result, if such reagents are produced in mammalian cells, proper glycosylation would result and the reagents would have a potentially more accurate representation of the natural T-cell target.

TECHNOLOGY DESCRIPTION

This technology involves the coexpression of leucine zipper tagged single chain class I MHC molecules and the TAPBPR chaperone in mammalian cells to produce glycosylated MHC-I that are ready to accept an antigenic peptide of interest.

The expressed MHC-I can be purified from the supernatant, the leucine zippers removed through use of a specific protease (with a site engineered into the construct), multimerized, and contacted with the peptide of interest. In contrast with other technologies in this portfolio (e.g. 2018-408), no placeholder peptide is needed to create the peptide receptive MHC-I.

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OTHER INFORMATION

KEYWORDS

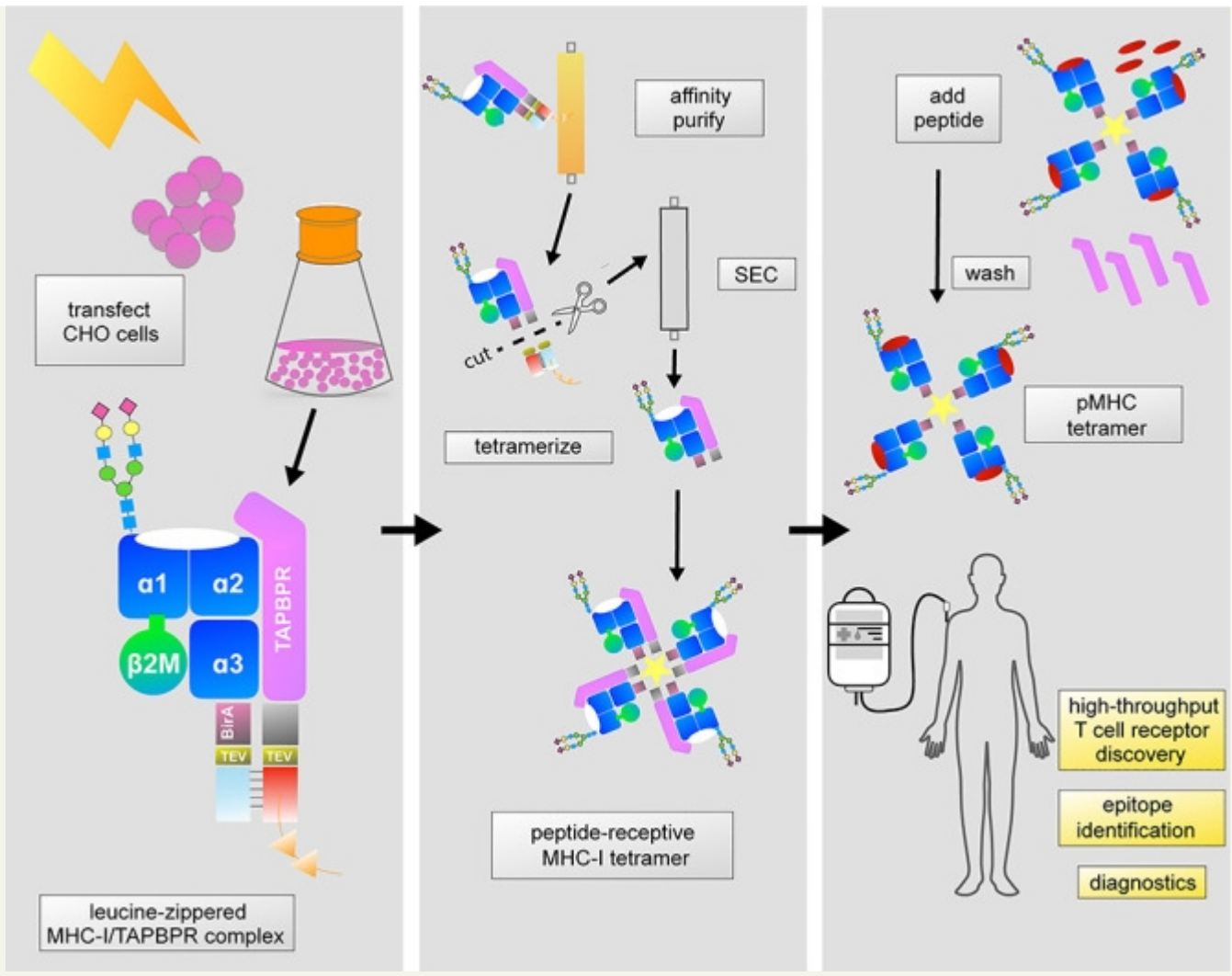
MHC-I, Glycosylated MHC-I, MHC-I multimer, Empty MHC-I, Peptide receptive MHC-I, Mammalian MHC-I, MHC-I tetramer, MHC-I reagent, TAPBPR, chaperone, MHC, Major Histocompatability Complex

CATEGORIZED AS

- **Materials & Chemicals**
  - Biological
- **Research Tools**
  - Reagents

RELATED CASES

2020-251-0, 2018-408-0



APPLICATIONS

Peptide-receptive (empty) MHC-I reagents

MHC-I Multimer reagents

T Cell receptor discovery

T Cell epitope identification

ADVANTAGES

Glycosylated MHC-I are more realistic

Efficient production of soluble MHC-I reagents from mammalian cells

MHC-I can be purified from supernatants

No need for placeholder peptide

INTELLECTUAL PROPERTY INFORMATION

Country	Type	Number	Dated	Case
European Patent Office	Published Application	402841.2	07/20/2022	2020-251
United States Of America	Published Application	20210155670	05/27/2021	2020-251
United States Of America	Published Application	20210079461	03/18/2021	2018-408

Additional Patent Pending

RELATED MATERIALS

- Production of soluble pMHC-I molecules in mammalian cells using the molecular chaperone TAPBPR - 12/31/2019

RELATED TECHNOLOGIES

- Systems And Methods For Generating Class 1 Major Histocompatibility Complex Multimer Screening Reagents Using Chaperone Mediated Peptide Exchange

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