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.

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 Histocompatibility 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

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Number</th>
<th>Dated</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Patent Office</td>
<td>Published Application</td>
<td>402841.2</td>
<td>07/20/2022</td>
<td>2020-251</td>
</tr>
<tr>
<td>United States Of America</td>
<td>Published Application</td>
<td>20210155670</td>
<td>05/27/2021</td>
<td>2020-251</td>
</tr>
<tr>
<td>United States Of America</td>
<td>Published Application</td>
<td>20210079461</td>
<td>03/18/2021</td>
<td>2018-408</td>
</tr>
</tbody>
</table>
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