[0011e] In another aspect, the present disclosure refers to use of a pharmaceutical composition comprising the cell as disclosed herein as a pharmaceutically effective ingredient in the manufacture of a medicament for treating cancer, wherein the cancer is a HLA-DR overexpressing cancer.

[0011f] In another aspect, the present disclosure refers to use of a pharmaceutical composition comprising a T cell comprising a therapeutically effective quantity of the antigen-binding molecule as disclosed herein as a pharmaceutically effective ingredient in the manufacture of a medicament for treating cancer, wherein the cancer is a HLA-DR overexpressing cancer.

[0011g] In another aspect, the present disclosure refers to an *in vitro* method of manufacturing a T cell with a modified chimeric antigen receptor (CAR-T), comprising a step of infecting a T cell with nucleic acids that encode an antigen-binding molecule comprising a heavy chain variable region represented by Sequence No. 7 and a light-chain variable region represented by Sequence No. 8; wherein the antigen-binding molecule is a chimeric antigen receptor (CAR).

Detailed Description of the Invention

Problem to be solved

[0012] An object of the present invention is to provide an MVR that may be clinically applied, and to provide CAR-T cells having an excellent therapeutic effect. Specifically, the present invention provides a co-stimulatory domain that may be introduced into various CAR-T cells as an co-stimulatory domain that plays a major role in its function in second-generation CAR-T cells. Moreover, it is an object of the present invention to provide various antigen-binding domains that are able to bind to antigens expressed on the surface of particular cancer cells and are capable of forming CAR-T cells.

Means of solving the problem

[0013] 1. An antigen-binding molecule comprising a heavy chain variable region comprising a heavy-chain complementarity-determining region 1 (HCDR1) comprising an amino acid sequence represented by Sequence No. 1, an HCDR2 comprising an amino acid sequence represented by Sequence No. 2, and an HCDR3 comprising an amino acid sequence represented by Sequence No. 3; a light-chain variable region comprising a light-chain complementarity-

Claims

[Claim 1]

Antigen-binding molecule comprising a heavy chain variable region represented by Sequence No. 7 and a light-chain variable region represented by Sequence No. 8; wherein the antigen-binding molecule is a chimeric antigen receptor (CAR).

[Claim 2]

Antigen-binding molecule according to Claim 1, comprising an amino acid sequence represented by Sequence No. 9.

[Claim 3]

Antigen-binding molecule according to Claim 1, further comprising the amino acid sequence represented by Sequence No. 13.

[Claim 4]

Antigen-binding molecule according to Claim 1, further comprising an amino acid sequence represented by Sequence No. 14.

[Claim 5]

Antigen-binding molecule according to Claim 1, further comprising a transmembrane domain and an intracellular signaling domain for activating T cells.

[Claim 6]

Antigen-binding molecule according to Claim 5, in which the said transmembrane domain is selected from the group made up of an alpha chain of a T cell receptor, a beta chain of a T cell receptor, a zeta chain of a T cell receptor, CD28, CD45, CD4, CD5, CD8, CD9, CD16, CD22, CD33, CD37, CD64, CD80, CD86, CD134, CD137 and CD154, wherein the said intracellular signaling domain is a CD3zeta signaling domain and a co-stimulatory signaling domain.

[Claim 7]

Antigen-binding molecule according to Claim 6, wherein the co-stimulatory signaling domain is selected from the group made up of CD28, OX040, CD27, ICAM-1, CD278, and CD137.

[Claim 8]
Nucleic acid molecule encoding an antigen-binding molecule according to Claim 7.

[Claim 9]
Expression vector comprising the nucleic acid molecule of Claim 8.

[Claim 10]
Cell comprising the nucleic acid molecule of Claim 8.

[Claim 11]
Cell according to Claim 10 that is a T cell.

[Claim 12]
Cell according to Claim 11, wherein the T cells are CD8+ T cells and/or CD4+ T cells.

[Claim 13]
Cell according to Claim 10 that is a chimeric antigen receptor-modified T cell (CAR-T).

[Claim 14]
Use of a pharmaceutical composition comprising the cell of Claim 11 as a pharmaceutically effective ingredient in the manufacture of a medicament for treating cancer, wherein the cancer is a HLA-DR overexpressing cancer.

[Claim 15]
The use according to Claim 14, wherein the cancer is esophageal adenocarcinoma, colorectal cancer, melanoma, ocular melanoma, small cell lung cancer, neuroblastoma, teratoma, fetal cancer, squamous cell carcinoma, head and neck squamous cell carcinoma, thymoma, lymphocytic leukemia, B-cell lymphoma, diffuse large B-cell lymphoma, leukemia, acute myeloid leukemia, or the like.

[Claim 16]
Use of a pharmaceutical composition comprising a T cell comprising a therapeutically effective quantity of the antigen-binding molecule of Claim 7 as a pharmaceutically effective ingredient in the manufacture of a medicament for treating cancer, wherein the cancer is a HLA-DR

overexpressing cancer.

[Claim 17]
The use according to Claim 16, in which the pharmaceutical composition either comprises CD8+ T cells, or comprises CD4+ T cells and CD8+ T cells.

[Claim 18]
The use according to Claim 17, wherein the proportion of the cell counts of CD4+ T cells to CD8+ T cells is substantially 1:1.

[Claim 19]
An *in vitro* method of manufacturing a T cell with a modified chimeric antigen receptor (CAR-T), comprising a step of infecting a T cell with nucleic acids that encode an antigen-binding molecule comprising a heavy chain variable region represented by Sequence No. 7 and a light-chain variable region represented by Sequence No. 8; wherein the antigen-binding molecule is a chimeric antigen receptor (CAR).