tumor can be temporarily treated. Furthermore, preventive measures against recurrence have not been discussed. Accordingly, an object of the present disclosure is to provide an enhancer for endogenous T-cells or B-cells having a memory function, a malignant tumor recurrence inhibitor, and an inducer for inducing a memory function in endogenous T-cells or B-cells in order to continue to reject malignant tumor over a long period of time.

Means to Solve the Object

[0008a]

In one aspect, the present disclosure provides the use of a nucleic acid delivery vehiclecomprising a nucleic acid encoding interleukin-7 (IL-7) and a nucleic acid encoding chemokine (C-C motif) ligand 19 (CCL19) in the manufacture of a medicament for inhibiting malignant tumor recurrence or malignant tumor metastasis, wherein the nucleic acid delivery vehicle is an immune cell, and the immune cell has a cell surface molecule that recognizes a malignant tumor antigen, wherein the malignant tumor recurrence or malignant tumor metastasis is a malignant tumor recurrence or malignant tumor metastasis ascribable to a malignant tumor cell having no malignant tumor antigen that is specifically recognized by the cell surface molecule, wherein the cell surface molecule that recognizes a malignant tumor antigen is a chimeric antigen receptor (CAR) or a T-cell receptor (TCR) and wherein the immune cell is a T-cell.

[0008b]

In another aspect, the present disclosure provides the use of a nucleic acid delivery vehiclecomprising a nucleic acid encoding interleukin-7 (IL-7), and a nucleic acid encoding chemokine (C-C motif) ligand 19 (CCL19) in the manufacture of a medicament for inhibiting a malignant tumor formation, wherein the nucleic acid delivery vehicle is an immune cell, and the immune cell has a cell surface molecule that recognizes a malignant tumor antigen, wherein the malignant tumor is a

malignant tumor ascribable to a malignant tumor cell having no malignant tumor antigen that is specifically recognized by the cell surface molecule, wherein the cell surface molecule that recognizes a malignant tumor antigen is a chimeric antigen receptor (CAR) or a T-cell receptor (TCR) and wherein the immune cell is a T-cell.

[0009]

The present inventors have studied the further possibilities of the previously developed T-cells expressing CAR, IL-7 and CCL19 and consequently found that: the administration of the T-cells to a subject induces a memory function not only in the administered T-cells but in endogenous T-cells in the subject (host) and increases the absolute number of cells having a memory function; and in a recurrence model experiment of malignant tumor, this administration suppresses malignant tumor formation in cells having no antigen that is recognized by CAR. The present inventors have further found that use of TCR instead of CAR or use of a virus instead of T-cells also produces similar effects. On the basis of these findings, the present invention has been completed.

[0010]

Specifically, the present invention is as follows.

(1) An enhancer for T-cells or B-cells having a memory function in an administration subject, comprising a nucleic acid delivery vehicle, a nucleic acid encoding

CLAIMS

1. Use of a nucleic acid delivery vehicle comprising a nucleic acid encoding interleukin-7 (IL-7) and a nucleic acid encoding chemokine (C-C motif) ligand 19 (CCL19) in the manufacture of a medicament for inhibiting malignant tumor recurrence or malignant tumor metastasis, wherein the nucleic acid delivery vehicle is an immune cell, and the immune cell has a cell surface molecule that recognizes a malignant tumor antigen, wherein the malignant tumor recurrence or malignant tumor metastasis is a malignant tumor recurrence or malignant tumor metastasis ascribable to a malignant tumor cell having no malignant tumor antigen that is specifically recognized by the cell surface molecule, wherein the cell surface molecule that recognizes a malignant tumor antigen is a chimeric antigen receptor (CAR) or a T-cell receptor (TCR) and
wherein the immune cell is a T-cell.

2. The use according to claim 1, wherein the immune cell has a cytotoxicity against malignant tumor cells.

3. The use according to claim 1 or 2, wherein the medicament is to be intratumorally or intravenously administered in a subject.

4. Use of a nucleic acid delivery vehicle comprising a nucleic acid encoding interleukin-7 (IL-7), and a nucleic acid encoding chemokine (C-C motif) ligand 19 (CCL19) in the manufacture of a medicament for inhibiting a malignant

tumor formation, wherein the nucleic acid delivery vehicle is an immune cell, and the immune cell has a cell surface molecule that recognizes a malignant tumor antigen, wherein the malignant tumor is a malignant tumor ascribable to a malignant tumor cell having no malignant tumor antigen that is specifically recognized by the cell surface molecule,
wherein the cell surface molecule that recognizes a malignant tumor antigen is a chimeric antigen receptor (CAR) or a T-cell receptor (TCR) and
wherein the immune cell is a T-cell.