

- (18) A host cell transformed with the vector of (17) above.
- (19) A method of preparing an antibody, comprising culturing the host cell of (18) above and collecting an anti-PD-L1 antibody from the resultant culture.
- (20) A DNA encoding a light chain comprising a light chain variable region containing CDR1 having the amino acid sequence of QSLLYSENQKDY (SEQ ID NO: 37), CDR2 having the amino acid sequence of WAT and CDR3 having the amino acid sequence of GQYLVYPFT (SEQ ID NO: 38) and the light chain constant region of an antibody of an animal other than rat.
- (21) A DNA encoding a heavy chain comprising a heavy chain variable region containing CDR1 having the amino acid sequence of GYTFTSNF (SEQ ID NO: 39), CDR2 having the amino acid sequence of IYPEYGNT (SEQ ID NO: 40) and CDR3 having the amino acid sequence of ASEEAVISLVY (SEQ ID NO: 41) and the heavy chain constant region of an antibody of an animal other than rat.

The present specification encompasses the contents disclosed in the specifications and/or drawings of Japanese Patent Applications No. 2016-159088, No. 2016-159089, No. 2017-110723 and No. 2017-61454 based on which the present patent application claims priority.

In one aspect, the present disclosure refers to an anti-PD-L1 antibody comprising (a) and (b) or an anti-PD-L1 antibody comprising (c) and (d):

(a) a light chain comprising a light chain variable region containing CDR1 having the amino acid sequence of QSLLYSENQKDY (SEQ ID NO: 37), CDR2 having the amino acid sequence of WAT and CDR3 having the amino acid sequence of GQYLVYPFT (SEQ ID NO: 38) and the light chain constant region of a canine antibody having the amino acid sequence as shown in SEQ ID NO: 3;

(b) a heavy chain comprising a heavy chain variable region containing CDR1 having the amino acid sequence of GYTFTSNF (SEQ ID NO: 39), CDR2 having the amino acid sequence of IYPEYGNT (SEQ ID NO: 40) and CDR3 having the amino acid sequence of ASEEAVISLVY (SEQ ID NO: 41) and the heavy chain constant region of a canine antibody having the amino acid sequence as shown in SEQ ID NO: 4;

(c) a light chain comprising a light chain variable region containing CDR1 having the amino acid sequence of QSLLYSENQKDY (SEQ ID NO: 37), CDR2 having the amino acid sequence of WAT and CDR3 having the amino acid sequence of GQYLVYPFT (SEQ ID NO: 38) and the light chain constant region of a bovine antibody having the amino acid sequence as shown in SEQ ID NO: 100; and

(d) a heavy chain comprising a heavy chain variable region containing CDR1 having the amino acid sequence of GYTFTSNF (SEQ ID NO: 39), CDR2 having the amino acid sequence of IYPEYGNT (SEQ ID NO: 40) and CDR3 having the amino acid sequence of ASEEAVISLVY (SEQ ID NO: 41) and the heavy chain constant region of a bovine antibody having the amino acid sequence as shown in SEQ ID NO: 102.

In another aspect, the present disclosure refers to a pharmaceutical composition comprising the antibody as described herein as an active ingredient.

In another aspect, the present disclosure refers to the pharmaceutical composition as described herein for use as a medicament.

In another aspect, the present disclosure refers to use of the pharmaceutical composition as described herein in the manufacture of a medicament for treatment of cancers and/or infections in non-human subjects.

In another aspect, the present disclosure refers to an artificial genetic DNA encoding the anti-PD-L1 antibody as disclosed herein.

CLAIMS

1. An anti-PD-L1 antibody comprising (a) and (b) or an anti-PD-L1 antibody comprising (c) and (d):
 - (a) a light chain comprising a light chain variable region containing CDR1 having the amino acid sequence of QSLLYSENQKDY (SEQ ID NO: 37), CDR2 having the amino acid sequence of WAT and CDR3 having the amino acid sequence of GQYLVYPFT (SEQ ID NO: 38) and the light chain constant region of a canine antibody having the amino acid sequence as shown in SEQ ID NO: 3;
 - (b) a heavy chain comprising a heavy chain variable region containing CDR1 having the amino acid sequence of GYTFTSNF (SEQ ID NO: 39), CDR2 having the amino acid sequence of IYPEYGNT (SEQ ID NO: 40) and CDR3 having the amino acid sequence of ASEEAVISLVY (SEQ ID NO: 41) and the heavy chain constant region of a canine antibody having the amino acid sequence as shown in SEQ ID NO: 4;
 - (c) a light chain comprising a light chain variable region containing CDR1 having the amino acid sequence of QSLLYSENQKDY (SEQ ID NO: 37), CDR2 having the amino acid sequence of WAT and CDR3 having the amino acid sequence of GQYLVYPFT (SEQ ID NO: 38) and the light chain constant region of a bovine antibody having the amino acid sequence as shown in SEQ ID NO: 100; and
 - (d) a heavy chain comprising a heavy chain variable region containing CDR1 having the amino acid sequence of GYTFTSNF (SEQ ID NO: 39), CDR2 having the amino acid sequence of IYPEYGNT (SEQ ID NO: 40) and CDR3 having the amino acid sequence of ASEEAVISLVY (SEQ ID NO: 41) and the heavy chain constant region of a bovine antibody having the amino acid sequence as shown in SEQ ID NO: 102.
2. The antibody of claim 1, wherein the light chain variable region and the heavy chain variable region are derived from rat.
3. The antibody of claim 2, wherein the light chain variable region is the light chain variable region of a rat anti-bovine PD-L1 antibody and the heavy chain variable region is the heavy chain variable region of a rat anti-bovine PD-L1 antibody.
4. The antibody of claim 3, wherein the light chain variable region has the amino acid sequence as shown in SEQ ID NO. 1 and the heavy chain variable region has the amino acid sequence as shown in SEQ ID NO: 2.
5. The antibody of any one of claims 1 to 4, wherein the light chain constant region of a canine or bovine antibody has the amino acid sequence of the constant region of lambda

chain or kappa chain.

6. The antibody of any one of claims 1 to 5 which has a four-chain structure comprising two light chains and two heavy chains.
7. A pharmaceutical composition comprising the antibody of any one of claims 1 to 6 as an active ingredient.
8. The pharmaceutical composition of claim 7 for use as a medicament.
9. Use of the pharmaceutical composition of claim 7 in the manufacture of a medicament for treatment of cancers and/or infections in non-human subjects.
10. The use of claim 9, wherein the cancers and/or infections are selected from the group consisting of neoplastic diseases, leukemia, Johne's disease, anaplasmosis, bacterial mastitis, mycotic mastitis, mycoplasma infections (such as mycoplasma mastitis, mycoplasma pneumonia or the like), tuberculosis, *Theileria orientalis* infection, cryptosporidiosis, coccidiosis, trypanosomiasis and leishmaniasis.
11. An artificial genetic DNA encoding the anti-PD-L1 antibody of claim 1.
12. A vector comprising the artificial genetic DNA of claim 11.
13. A host cell transformed with the vector of claim 12.
14. A method of preparing an antibody, comprising culturing the host cell of claim 13 and collecting an anti-PD-L1 antibody from the resultant culture.