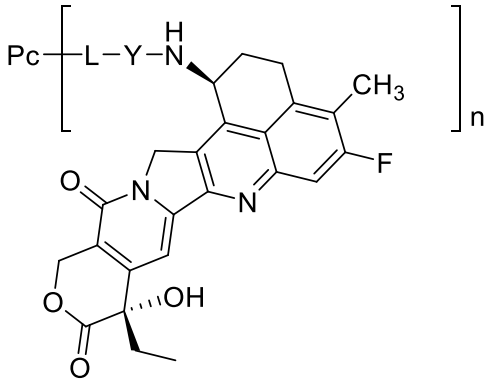
CLAIMS

1. An antibody-drug conjugate or a pharmaceutically acceptable salt thereof, having a structure represented by general formula Pc-L-Y-D:



Pc-L-Y-D

wherein:

Pc is an anti-DLL3 antibody comprising a heavy chain variable region and a light chain variable region, wherein:

i) the heavy chain variable region comprises: a HCDR1 comprising the amino acid sequence of SEQ ID NO: 22, a HCDR2 comprising the amino acid sequence of SEQ ID NO: 23, and a HCDR3 comprising the amino acid sequence of SEQ ID NO: 57; and

the light chain variable region comprises: a LCDR1 comprising the amino acid sequence of SEQ ID NO: 25, a LCDR2 comprising the amino acid sequence of SEQ ID NO: 26, and a LCDR3 comprising the amino acid sequence of SEQ ID NO: 27;

wherein, SEQ ID NO: 57 is represented by PLYX$_1$YGRSYNX$_2$VAY, wherein X$_1$ is Y or H; X$_2$ is A or G; or

ii) the heavy chain variable region comprises: a HCDR1 comprising the amino acid sequence of SEQ ID NO: 16, a HCDR2 comprising the amino acid sequence of SEQ ID NO: 17, and a HCDR3 comprising the amino acid sequence of SEQ ID NO: 18; and

the light chain variable region comprises: a LCDR1 comprising the amino acid sequence of SEQ ID NO: 19, a LCDR2 comprising the amino acid sequence of SEQ ID NO: 20, and a LCDR3 comprising the amino acid sequence of SEQ ID NO: 21;

preferably,

the heavy chain variable region comprises: a HCDR1 comprising the amino acid sequence of SEQ ID NO: 22, a HCDR2 comprising the amino acid sequence of SEQ ID NO: 23, and a HCDR3 comprising the amino acid sequence of SEQ ID NO: 24, 30, or 31; and

the light chain variable region comprises: a LCDR1 comprising the amino acid sequence of SEQ ID NO: 25, a LCDR2 comprising the amino acid sequence of SEQ ID NO: 26, and a LCDR3 comprising the amino acid sequence of SEQ ID NO: 27;

Y is -O-CR^{1}R^2-C(O)-, wherein R^1 is C$_{1-6}$ haloalkyl or C$_{3-6}$ cycloalkyl; R^2 is selected from the group consisting of a hydrogen atom, C$_{1-6}$ haloalkyl, and C$_{3-6}$ cycloalkyl; or, R^1 and R^2, together with the carbon atom to which they are attached, form C$_{3-6}$ cycloalkyl;

n is 1 to 10;
L is a linker.

2. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to claim 1, wherein the anti-DLL3 antibody is a murine antibody, a chimeric antibody, or a humanized antibody, preferably a humanized antibody.

3. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to claim 1 or 2, wherein the anti-DLL3 antibody comprises:
i) the heavy chain variable region comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 50, 14, 51, 52, 53, or 54; and/or
the light chain variable region comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 55, 15, or 56; or
ii) the heavy chain variable region comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 43, 12, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, or 44; and/or
the light chain variable region comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 48, 13, 45, 46, 47, or 49;
preferably,
i) the heavy chain variable region comprises an amino acid sequence selected from the group consisting of any one of SEQ ID NOs: 50, 51, 52, 53, and 54, and/or the light chain variable region comprises the amino acid sequence of SEQ ID NO: 55 or 56; or
ii) the heavy chain variable region comprises an amino acid sequence selected from the group consisting of any one of SEQ ID NOs: 43, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, and 44, and/or the light chain variable region comprises an amino acid sequence selected from the group consisting of any one of SEQ ID NOs: 48, 45, 46, 47, and 49; or
iii) the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 14, and/or the light chain variable region comprises the amino acid sequence of SEQ ID NO: 15; or
iv) the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 12, and/or the light chain variable region comprises the amino acid sequence of SEQ ID NO: 13;
more preferably,
the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 50, and the light chain variable region comprises the amino acid sequence of SEQ ID NO: 55; or
the heavy chain variable region comprises the amino acid sequence of SEQ ID NO: 43, and the light chain variable region comprises the amino acid sequence of SEQ ID NO: 48.

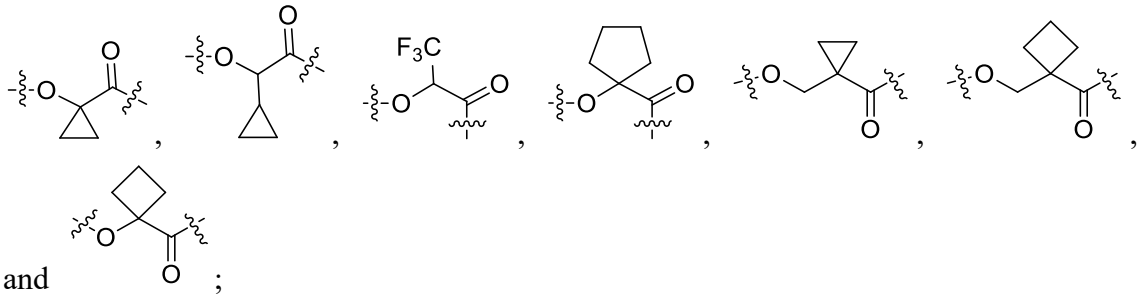
4. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according

to any one of claims 1 to 3, wherein the anti-DLL3 antibody is an antibody fragment; preferably, the antibody fragment is a Fab, Fab', $F(ab')_2$, Fab'-SH, Fd, Fv, scFv, dsFv, diabody, or domain antibody.

5. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 3, wherein the anti-DLL3 antibody comprises a heavy chain constant region and a light chain constant region; preferably, the heavy chain constant region comprises the amino acid sequence of SEQ ID NO: 28, and/or the light chain constant region comprises the amino acid sequence of SEQ ID NO: 29.

6. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to claim 5, wherein the anti-DLL3 antibody comprises a heavy chain and a light chain, wherein:
the heavy chain comprises an amino acid sequence having at least 85% sequence identity to SEQ ID NO: 60, and/or the light chain comprises an amino acid sequence having at least 85% sequence identity to SEQ ID NO: 61; or
the heavy chain comprises an amino acid sequence having at least 85% sequence identity to SEQ ID NO: 58, and/or the light chain comprises an amino acid sequence having at least 85% sequence identity to SEQ ID NO: 59;
preferably,
the heavy chain comprises the amino acid sequence of SEQ ID NO: 60, and the light chain comprises the amino acid sequence of SEQ ID NO: 61; or
the heavy chain comprises the amino acid sequence of SEQ ID NO: 58, and the light chain comprises the amino acid sequence of SEQ ID NO: 59.

7. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 6, wherein the Y is selected from the group consisting of:



and ;
wherein the O-end of Y is attached to L.

8. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 7, wherein the L is $-L^1-L^2-L^3-L^4-$, wherein:
L^1 is selected from the group consisting of -(succinimid-3-yl-*N*)-W-C(O)-, $-CH_2-C(O)-NR^3$-W-C(O)-, and -C(O)-W-C(O)-, wherein W is C_{1-6} alkylene or C_{1-6} alkylene-C_{3-6} cycloalkyl, wherein the C_{1-6} alkylene or C_{1-6} alkylene-C_{3-6} cycloalkyl is each

independently optionally further substituted with one or more substituents selected from the group consisting of halogen, hydroxy, cyano, amino, alkyl, chloroalkyl, deuterated alkyl, alkoxy, and cycloalkyl;

L^2 is selected from the group consisting of $-NR^4(CH_2CH_2O)_pCH_2CH_2C(O)-$, $-NR^4(CH_2CH_2O)_pCH_2C(O)-$, and a chemical bond, wherein p is an integer from 1 to 20;

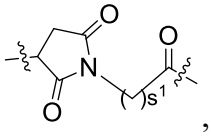
L^3 is a peptide residue consisting of 2 to 7 amino acid residues, wherein the amino acids are selected from the group consisting of phenylalanine, glycine, valine, lysine, citrulline, serine, glutamic acid, and aspartic acid, and are optionally further substituted with one or more substituents selected from the group consisting of halogen, hydroxy, cyano, amino, alkyl, chloroalkyl, deuterated alkyl, alkoxy, and cycloalkyl;

L^4 is selected from the group consisting of $-NR^5(CR^6R^7)_t-$, $-C(O)NR^5-$, $-C(O)NR^5(CH_2)_t-$, and a chemical bond, wherein t is an integer from 1 to 6;

R^3, R^4, and R^5 are identical or different and are each independently selected from the group consisting of a hydrogen atom, alkyl, haloalkyl, deuterated alkyl, and hydroxyalkyl;

R^6 and R^7 are identical or different and are each independently selected from the group consisting of a hydrogen atom, halogen, alkyl, haloalkyl, deuterated alkyl, and hydroxyalkyl;

preferably,

L^1 is , and s^1 is an integer from 2 to 8;

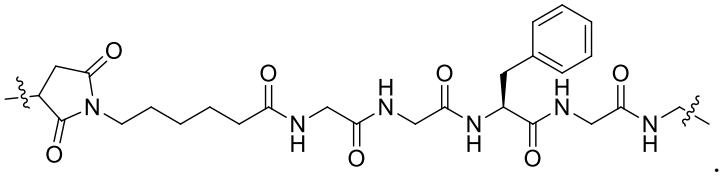
L^2 is a chemical bond;

L^3 is a tetrapeptide residue; preferably, L^3 is a tetrapeptide residue comprising glycine-glycine-phenylalanine-glycine;

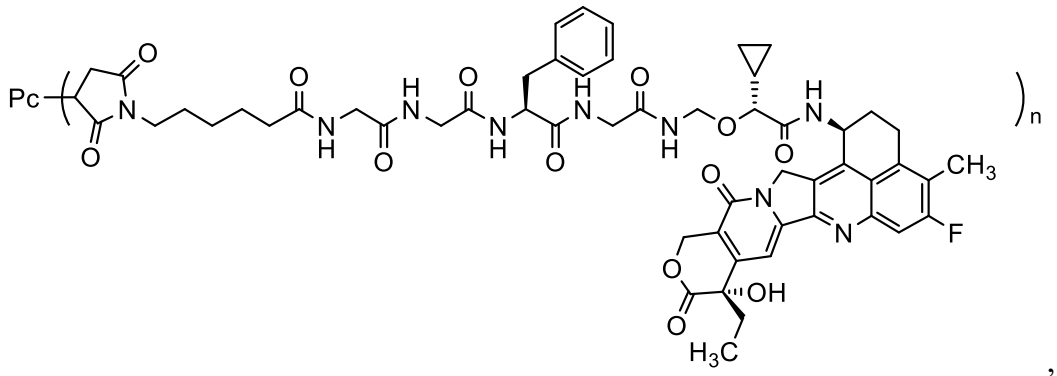
L^4 is $-NH(CH_2)t-$, and t is 1 or 2;

wherein the L^1 end is attached to Pc;

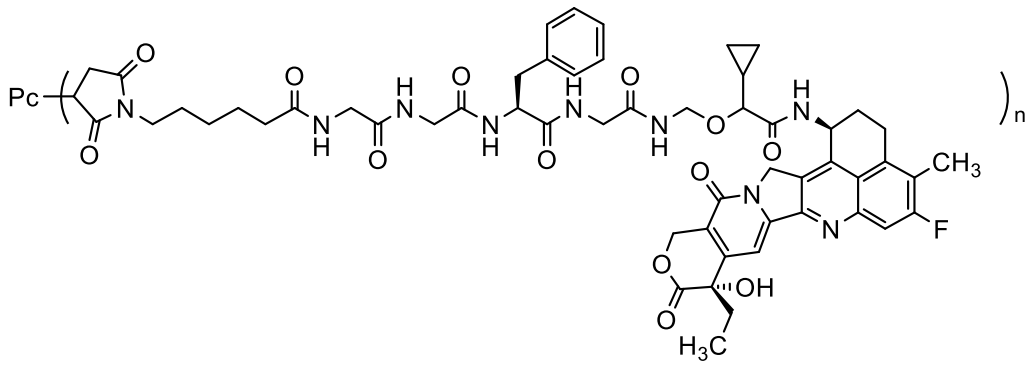
more preferably, the L is represented by the following structure:

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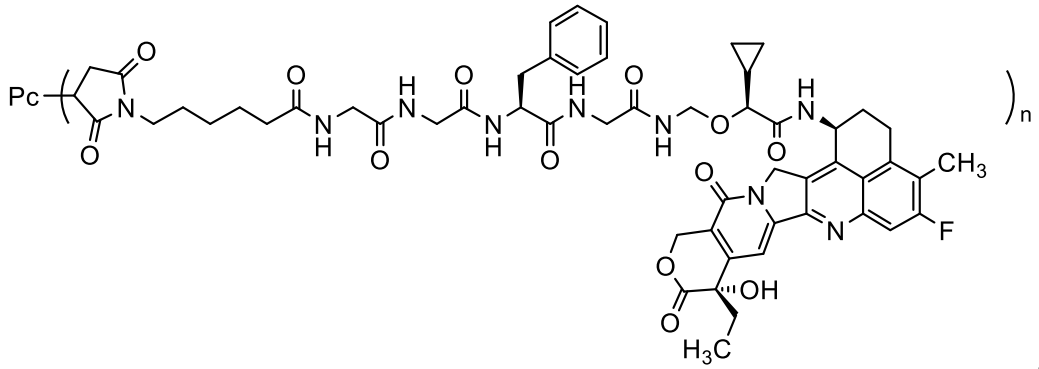
9. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 8, wherein the antibody-drug conjugate has the following structure:



,



, or

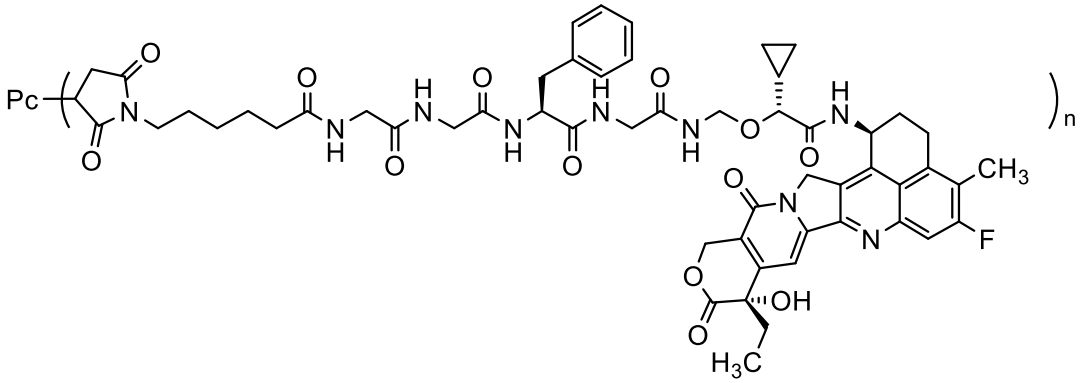


,

wherein:

Pc is the anti-DLL3 antibody according to claim 1; n is 1 to 10;

preferably, the antibody-drug conjugate has the following structure:



, wherein:

Pc is an anti-DLL3 antibody comprising a heavy chain and a light chain, wherein:

the heavy chain comprises the amino acid sequence of SEQ ID NO: 60, and the light chain comprises the amino acid sequence of SEQ ID NO: 61; or

the heavy chain comprises the amino acid sequence of SEQ ID NO: 58, and the light chain comprises the amino acid sequence of SEQ ID NO: 59;
n is 3 to 8; more preferably, n is 6 to 8.

10. A pharmaceutical composition, comprising:
the antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 9, and one or more pharmaceutically acceptable excipients, diluents, or carriers.

11. Use of the antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 9 or the pharmaceutical composition according to claim 10 in the preparation of a medicament for treating a tumor or cancer, wherein preferably, the tumor or cancer is selected from the group consisting of:
lung cancer, head and neck squamous cell carcinoma, head and neck cancer, brain cancer, neuroglioma, glioblastoma multiforme, neuroblastoma, central nervous system cancer, neuroendocrine tumor, throat cancer, pharyngeal squamous cell carcinoma, oral squamous cell carcinoma, nasopharyngeal cancer, esophageal cancer, thyroid cancer, medullary thyroid cancer, malignant pleural mesothelioma, breast cancer, triple-negative breast cancer, liver cancer, hepatobiliary cancer, pancreatic cancer, gastric cancer, gastrointestinal cancer, intestinal cancer, colorectal cancer, kidney cancer, clear cell renal cell carcinoma, ovarian cancer, endometrial cancer, cervical cancer, bladder cancer, prostate cancer, testicular cancer, adrenal cancer, glioblastoma, skin cancer, and melanoma; more preferably, the lung cancer is small cell lung cancer.

12. The antibody-drug conjugate or the pharmaceutically acceptable salt thereof according to any one of claims 1 to 9 or the pharmaceutical composition according to claim 10 for use in therapy.