To address this, pertuzumab (Perjeta®), a second generation HER2 humanised monoclonal antibody was developed. It binds to HER2 domain II, an epitope which hinders the receptor's dimerization. A phase III clinical study comparing the use of pertuzumab in combination with trastuzumab, and an anti-mitotic drug docetaxel (Taxotere®) in HER2-positive patients, showed significant improvements in overall survival with the new regimen, prompting the FDA to approve the combination therapy for treatment of HER2-positive metastatic breast cancer patients in 2012.

The prevalence of HER2-related cancers and the high risk of resistance to current therapies highlights the importance of developing new therapeutics to treat such cancers.

**Summary**

The present disclosure is concerned with antibodies, or antigen binding fragments, that bind to HER2. Heavy and light chain polypeptides are also disclosed. The antibodies, antigen binding fragments and polypeptides may be provided in isolated and/or purified form and may be formulated into compositions suitable for use in research, therapy and diagnosis.

In one aspect, the present disclosure refers to an antibody or antigen binding fragment which is capable of binding to HER2, optionally isolated, wherein the antibody or antigen binding fragment comprises: (i) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTGHYAS (SEQ ID NO:15)
LC-CDR2: NTNTRSS (SEQ ID NO:16)
LC-CDR3: VLYVGDGIWV (SEQ ID NO:17); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYYIH (SEQ ID NO:18)
HC-CDR2: IINPGNGDTNYAQRFQG (SEQ ID NO:19)
HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20);or

(ii) a light chain variable region incorporating the following CDRs:
LC-CDR1: GLSSGSVSTGYYPS (SEQ ID NO:21)
LC-CDR2: STNSRSS (SEQ ID NO:22)
LC-CDR3: VLYMGSGISV (SEQ ID NO:23); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SSSYYWG (SEQ ID NO:24)
HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25)
HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26); or

(iii) a light chain variable region incorporating the following CDRs:
LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)
LC-CDR2: TTNIRSS (SEQ ID NO:28)
LC-CDR3: MLYMGSGIWV (SEQ ID NO:29); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: GYYWS (SEQ ID NO:30)
HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31)
HC-CDR3: MGINSGGYLYGMDV (SEQ ID NO:32); or

(iv) a light chain variable region incorporating the following CDRs:
LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)
LC-CDR2: STNTRSS (SEQ ID NO:33)
LC-CDR3: VLYMGSGIWV (SEQ ID NO:34); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SSNWWS (SEQ ID NO:35)
HC-CDR2: EIYHSGSTNYNPSLKS (SEQ ID NO:36)
HC-CDR3: MGANSGGYLYGMDV (SEQ ID NO:37); or

(v) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGFNYLD (SEQ ID NO:74)
LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MQGLQTPYT (SEQ ID NO:76); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYGMH (SEQ ID NO:77)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3 DLFAVVGYYYYYGMDV (SEQ ID NO:79); or
(vi) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSDGNKYLD (SEQ ID NO:84)
LC-CDR2: LGSNRAS (SEQ ID NO:75)
LC-CDR3: MLGTHWPPMYI (SEQ ID NO:85); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SAAAAWN (SEQ ID NO:86)
HC-CDR2: RTYYRSKWYSEYAVSVKS (SEQ ID NO:87)
HC-CDR3: GSIFDV (SEQ ID NO:88); or
(vii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)
LC-CDR2: KVSNRDS (SEQ ID NO:94)
LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SRGYYGMDV (SEQ ID NO:97); or
(viii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSNRAS (SEQ ID NO:75)
LC-CDR3: MQALQTPWT (SEQ ID NO:103); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: WINAGNGNTKYSQKFQG (SEQ ID NO:104)
HC-CDR3: GGYLVGY (SEQ ID NO:105); or
(ix) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGNTYLD (SEQ ID NO:110)
LC-CDR2: SGSNRAS (SEQ ID NO:111)
LC-CDR3: MQGTHWPPT (SEQ ID NO:112); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SFAMN (SEQ ID NO:113)
HC-CDR2: TIGGSGDSTFYADPVKG (SEQ ID NO:114)
HC-CDR3: AYGSGGHYFFAY (SEQ ID NO:115); or
(x) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASQSVRNNLA (SEQ ID NO:120)
LC-CDR2: YASTRAT (SEQ ID NO:121)
LC-CDR3: QHYGSSRT (SEQ ID NO:122); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYGIS (SEQ ID NO:123)
HC-CDR2: WISAYNGNTNYAQKLQG (SEQ ID NO:124)
HC-CDR3: DWGSSWSDY (SEQ ID NO:125); or
(xi) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSNRAS (SEQ ID NO:75)
LC-CDR3: MAGLQTPRLT (SEQ ID NO:130); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMS (SEQ ID NO:131)
HC-CDR2: AISGSGGSTYYADSVKG (SEQ ID NO:132)
HC-CDR3: TYYDFWSGRVGAFDI (SEQ ID NO:133); or
(xii) a light chain variable region incorporating the following CDRs:
LC-CDR1: GSTTGAVTSGHYPS (SEQ ID NO:138)
LC-CDR2: STSNKHS (SEQ ID NO:139)
LC-CDR3: LLYYGGARV (SEQ ID NO:140); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYGMH (SEQ ID NO:77)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: DRGYYGMDV (SEQ ID NO:141); or
(xiii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSHRAS (SEQ ID NO:146)

LC-CDR3: MQALQTPLT (SEQ ID NO:147); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAIS (SEQ ID NO:148)
HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)
HC-CDR3: GRGSGYPDTWFWFDP (SEQ ID NO:150); or

(xiv) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSNRAP (SEQ ID NO:155)
LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156); or

(xv) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161)
LC-CDR2: GASSRAT (SEQ ID NO:162)
LC-CDR3: QQYGSSPRT (SEQ ID NO:163); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMS (SEQ ID NO:131)
HC-CDR2: GINWNGGSTGYADSVKG (SEQ ID NO:164)
HC-CDR3: GLVPAASMDV (SEQ ID NO:165); or

(xvi) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLQHSNGYQYLD (SEQ ID NO:170)
LC-CDR2: LGSFRAS (SEQ ID NO:171)
LC-CDR3: MHALSTPPWT (SEQ ID NO:172); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: TYTMH (SEQ ID NO:173)
HC-CDR2: WITPGNGNTHYSQNFQG (SEQ ID NO:174)
HC-CDR3: SRVGALDY (SEQ ID NO:175); or

(xvii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)
LC-CDR2: KVSNRDS (SEQ ID NO:94)
LC-CDR3: MQGTHWPGT (SEQ ID NO:180); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYGMH (SEQ ID NO:77)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SRGYSGYDN (SEQ ID NO:181); or

(xviii) a light chain variable region incorporating the following CDRs:
LC-CDR1: TGRSANIGGFDVQ (SEQ ID NO:186)
LC-CDR2: DNSNRPS (SEQ ID NO:187)
LC-CDR3: GTWDSYLNIWV (SEQ ID NO:188); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: GYYWS (SEQ ID NO:30)
HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31)
HC-CDR3: GLPYYYFDY (SEQ ID NO:189); or

(xix) a light chain variable region incorporating the following CDRs:
LC-CDR1: ALTSGSVSTSYYPS (SEQ ID NO:194)
LC-CDR2: STNLRSS (SEQ ID NO:195)
LC-CDR3: ELYMGSGISV (SEQ ID NO:196); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYWIG (SEQ ID NO:197)
HC-CDR2: IIYPGDSDTRYSPSFQG (SEQ ID NO:198)
HC-CDR3: LGYGVPLPEYFDL (SEQ ID NO:199); or

(xx) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)
LC-CDR2: KVSDRDS (SEQ ID NO:204)
LC-CDR3: MQGTHWPQT (SEQ ID NO:205); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206)
HC-CDR3: SRGYYGMDV (SEQ ID NO:97); or

(xxi) a light chain variable region incorporating the following CDRs:
LC-CDR1: TSSQSLVYSDGNTYLN (SEQ ID NO:211)
LC-CDR2: KVSKRDS (SEQ ID NO:212)

LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SRGYYGMDV (SEQ ID NO:97); or

(xxii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLRSDGYNFVD (SEQ ID NO:217)
LC-CDR2: LGSDRAS (SEQ ID NO:218)
LC-CDR3: MQALQTPRT (SEQ ID NO:219); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDESNKYYADSVKG (SEQ ID NO:220)
HC-CDR3: EPSGSWSYLYYYYYGMDV (SEQ ID NO:221); or

(xxiii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASQGISSWLA (SEQ ID NO:226)
LC-CDR2: AASSLQS (SEQ ID NO:227)
LC-CDR3: QQANSFPPT (SEQ ID NO:228); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SRGYYGMDV (SEQ ID NO:97); or

(xxiv) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161)
LC-CDR2: GASSRAT (SEQ ID NO:162)
LC-CDR3: QQYGSSSA (SEQ ID NO:233); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: NYGMH (SEQ ID NO:234)
HC-CDR2: FISYDGTNKYYADSVKG (SEQ ID NO:235)
HC-CDR3: HYGDYYYYYGMDV (SEQ ID NO:236); or

(xxv) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSNRAS (SEQ ID NO:75)
LC-CDR3: MQGTHWPGT (SEQ ID NO:180); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAIH (SEQ ID NO:241)
HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206)
HC-CDR3: VYGYGLHYYGMDV (SEQ ID NO:242); or

(xxvi) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASRSVGKYLA (SEQ ID NO:247)
LC-CDR2: DASTRAS (SEQ ID NO:248)
LC-CDR3: QHYGTSPPFI (SEQ ID NO:249); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAIS (SEQ ID NO:148)
HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)
HC-CDR3: SYDSSGYYYFDY (SEQ ID NO:250); or

(xxvii) a light chain variable region incorporating the following CDRs:
LC-CDR1: GLSSGSVSTTYYPS (SEQ ID NO:255)
LC-CDR2: STNTRSS (SEQ ID NO:33)
LC-CDR3: VLYMGNGISV (SEQ ID NO:256); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SSSYYWG (SEQ ID NO:24)
HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25)
HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26); or

(xxviii) a light chain variable region incorporating the following CDRs:
LC-CDR1: TLRSGINVGTYRIY (SEQ ID NO:261)
LC-CDR2: YKSDSDKQQGS (SEQ ID NO:262)
LC-CDR3: MIWHSSAWV (SEQ ID NO:263); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYGMH (SEQ ID NO:77)
HC-CDR2: VIWYDGSNKYYADSVKG (SEQ ID NO:264)
HC-CDR3: MTTEDY (SEQ ID NO:265); or

(xxix) a light chain variable region incorporating the following CDRs:
LC-CDR1: RASQSVSSYLA (SEQ ID NO:270)
LC-CDR2: DASNRAT (SEQ ID NO:271)

LC-CDR3: QQRSNWPLT (SEQ ID NO:272); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMS (SEQ ID NO:131)
HC-CDR2: SISSSSSYIYYADSVKG (SEQ ID NO:273)
HC-CDR3: DGSAWSRPY (SEQ ID NO:274); or

(xxx) a light chain variable region incorporating the following CDRs:
LC-CDR1: GLTSGAVSSSYYPS (SEQ ID NO:279)
LC-CDR2: NTDIRFS (SEQ ID NO:280)
LC-CDR3: VLYMGSGISV (SEQ ID NO:23); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: DYYIH (SEQ ID NO:281)
HC-CDR2: WVSAYNGDTNYAQKFQG (SEQ ID NO:282)
HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20); or

(xxxi) a light chain variable region incorporating the following CDRs:
LC-CDR1: TGNNNNVGFAGAA (SEQ ID NO:287)
LC-CDR2: RNNDRPS (SEQ ID NO:288)
LC-CDR3: SAWDSSLKVQV (SEQ ID NO:289); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAIS (SEQ ID NO:148)
HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)
HC-CDR3: GADWNSDY (SEQ ID NO:290); or

(xxxii) a light chain variable region incorporating the following CDRs:
LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)
LC-CDR2: LGSNRAP (SEQ ID NO:155)
LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and a heavy chain variable region incorporating the following CDRs:
HC-CDR1: SYAMH (SEQ ID NO:96)
HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)
HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156).

In another aspect, the present disclosure refers to a chimeric antigen receptor (CAR) comprising an antibody or antigen binding fragment as disclosed.

In another aspect, the present disclosure refers to an *in vitro* complex, optionally isolated, comprising an antibody or antigen binding fragment as disclosed, or a CAR according as disclosed, bound to HER2.

In another aspect, the present disclosure refers to a nucleic acid, optionally isolated, encoding an antibody or antigen binding fragment as disclosed, or a CAR as disclosed.

In another aspect, the present disclosure refers to a vector comprising the nucleic acid as disclosed.

In another aspect, the present disclosure refers to a cell comprising the nucleic acid as disclosed, or the vector as disclosed.

In another aspect, the present disclosure refers to a method for making an antibody or antigen binding fragment as disclosed herein, or a CAR as disclosed herein, comprising culturing a cell as disclosed under conditions suitable for the expression of the antibody, antigen binding fragment or CAR from the nucleic acid or vector.

In another aspect, the present disclosure refers to a composition comprising an antibody or antigen binding fragment as disclosed, or a cell as disclosed herein, and at least one pharmaceutically-acceptable carrier.

In another aspect, the present disclosure refers to an antibody or antigen binding fragment as disclosed herein, a cell as disclosed herein, or a composition as disclosed, for use in therapy, or in a method of medical treatment.

In another aspect, the present disclosure refers to a use of an antibody or antigen binding fragment as disclosed, a cell as disclosed or a composition as disclosed herein, in the manufacture of a medicament for use in the treatment of cancer.

In another aspect, the present disclosure refers to a method comprising contacting, *in vitro*, a sample containing, or suspected to contain, HER2 with an antibody or antigen binding fragment as disclosed herein, and detecting the formation of a complex comprising the antibody or antigen binding fragment and HER2.
In yet another aspect, the present disclosure refers to a method of diagnosing a HER2-positive cancer in a subject, the method comprising contacting, *in vitro*, a sample from the subject with an antibody or antigen binding

fragment as disclosed, and detecting the formation of a complex comprising the antibody or antigen binding fragment and HER2.

In one example of the present disclosure an antibody, or antigen binding fragment, is provided, the amino acid sequence of the antibody or antigen binding fragment may comprise the amino acid sequences i) to iii), or the amino acid sequences iv) to vi), or preferably the amino acid sequences i) to vi):

i) LC-CDR1: GLSSGSVSTX$_1$X$_2$YX$_3$S (SEQ ID NO:9);

ii) LC-CDR2: X$_4$TNX$_5$RSS (SEQ ID NO:10);

iii) LC-CDR3: X$_6$LYX$_7$GX$_8$GIX$_9$V (SEQ ID NO:11);

iv) HC-CDR1: X$_{10}$X$_{11}$X$_{12}$X$_{13}$X$_{14}$X$_{15}$X$_{16}$ (SEQ ID NO:12);

v) HC-CDR2: X$_{17}$X$_{18}$X$_{19}$X$_{20}$X$_{21}$X$_{22}$GX$_{23}$TX$_{24}$YX$_{25}$X$_{26}$X$_{27}$X$_{28}$X$_{29}$X$_{30}$ (SEQ ID NO:13);

vi) HC-CDR3: X$_{31}$X$_{32}$X$_{33}$X$_{34}$X$_{35}$SX$_{36}$X$_{37}$YX$_{38}$X$_{39}$X$_{40}$X$_{41}$X$_{42}$X$_{43}$ (SEQ ID NO:14);

or a variant thereof in which one or two or three amino acids in one or more of the sequences (i) to (vi) are replaced with another amino acid, where X$_1$ = G or S; X$_2$ = H or Y; X$_3$ = A or P; X$_4$ = N, S or T; X$_5$ = T, S or I; X$_6$ = V or M; X$_7$ = V or M; X$_8$ = D or S; X$_9$ = W or S; X$_{10}$ = S or absent; X$_{11}$ = S or absent; X$_{12}$ = S or G; X$_{13}$ = Y or N; X$_{14}$ = Y or W; X$_{15}$ = I or W; X$_{16}$ = H, G or S; X$_{17}$ = I or absent; X$_{18}$ = I, S or E; X$_{19}$ = N or I; X$_{20}$ = P, Y or N; X$_{21}$ = G, Y or H; X$_{22}$ = N or S; X$_{23}$ = D or S; X$_{24}$ = N or Y; X$_{25}$ = A or N; X$_{26}$ = Q or P, X$_{27}$ = R or S, X$_{28}$ = F or L; X$_{29}$ = Q or K; X$_{30}$ = G or S; X$_{31}$ = E or absent; X$_{32}$ = I, Y or M; X$_{33}$ = A or G; X$_{34}$ = S, P, I or A, X$_{35}$ = Y, D or N; X$_{36}$ = G or S; X$_{37}$ = G or S; X$_{38}$ = L or absent; X$_{39}$ = V or Y; X$_{40}$ = A, D or G; X$_{41}$ = F, M or Y; X$_{42}$ = D or absent; and X$_{43}$ = I, V or absent.

In some examples LC-CDR1 is one of GLSSGSVSTGHYAS (SEQ ID NO:15), GLSSGSVSTGYYPS (SEQ ID NO:21), or GLSSGSVSTSYYPS (SEQ ID NO:27).

In some examples LC-CDR2 is one of NTNTRSS (SEQ ID NO:16), STNSRSS (SEQ ID NO:22), TTNIRSS (SEQ ID NO:28), or STNTRSS (SEQ ID NO:33).

In some examples LC-CDR3 is one of VLYVGDGIWV (SEQ ID NO:17), VLYMGSGISV (SEQ ID NO:23); MLYMGSGIWV (SEQ ID NO:29), or VLYMGSGIWV (SEQ ID NO:34).

In some examples HC-CDR1 is one of SYYIH (SEQ ID NO:18), SSSYYWG (SEQ ID NO:24), GYYWS (SEQ ID NO:30), or SSNWWS (SEQ ID NO:35).

In some examples HC-CDR2 is one of IINPGNGDTNYAQRFQG (SEQ ID NO:19), SIYYSGSTYYNPSLKS (SEQ ID NO:25), EINHSGSTNYNPSLKS (SEQ ID NO:31), or EIYHSGSTNYNPSLKS (SEQ ID NO:36).

In some examples HC-CDR3 is one of EIASYSGSYYDY (SEQ ID NO:20), YAPDSSGYLVAFDI (SEQ ID NO:26), MGINSGGYLYGMDV (SEQ ID NO:32), or MGANSGGYLYGMDV (SEQ ID NO:37).

In some examples the antibody, or antigen binding fragment, may comprise at least one light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTX$_1$X$_2$YX$_3$S (SEQ ID NO:9);

LC-CDR2: X$_4$TNX$_5$RSS (SEQ ID NO:10);

LC-CDR3: X$_6$LYX$_7$GX$_8$GIX$_9$V (SEQ ID NO:11);

where X$_1$ = G or S; X$_2$ = H or Y; X$_3$ = A or P; X$_4$ = N, S or T; X$_5$ = T, S or I; X$_6$ = V or M; X$_7$ = V or M; X$_8$ = D or S; and X$_9$ = W or S.

In some examples the antibody, or antigen binding fragment, may comprise at least one light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTGHYAS (SEQ ID NO:15)

LC-CDR2: NTNTRSS (SEQ ID NO:16)

LC-CDR3: VLYVGDGIWV (SEQ ID NO:17).

In some examples the antibody, or antigen binding fragment, may comprise at least one light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTGYYPS (SEQ ID NO:21)

LC-CDR2: STNSRSS (SEQ ID NO:22)

LC-CDR3: VLYMGSGISV (SEQ ID NO:23).

In some examples the antibody, or antigen binding fragment, may comprise at least one light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)

LC-CDR2: TTNIRSS (SEQ ID NO:28)

LC-CDR3: MLYMGSGIWV (SEQ ID NO:29).

In some examples the antibody, or antigen binding fragment, may comprise at least one light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)

LC-CDR2: STNTRSS (SEQ ID NO:33)

LC-CDR3: VLYMGSGIWV (SEQ ID NO:34).

In some examples the antibody, or antigen binding fragment, may comprise at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: X$_{10}$X$_{11}$X$_{12}$X$_{13}$X$_{14}$X$_{15}$X$_{16}$ (SEQ ID NO:12);

HC-CDR2: X$_{17}$X$_{18}$X$_{19}$X$_{20}$X$_{21}$X$_{22}$GX$_{23}$TX$_{24}$YX$_{25}$X$_{26}$X$_{27}$X$_{28}$X$_{29}$X$_{30}$ (SEQ ID NO:13);

HC-CDR3: X$_{31}$X$_{32}$X$_{33}$X$_{34}$X$_{35}$SX$_{36}$X$_{37}$YX$_{38}$X$_{39}$X$_{40}$X$_{41}$X$_{42}$X$_{43}$ (SEQ ID NO:14);

where X$_{10}$ = S or absent; X$_{11}$ = S or absent; X$_{12}$ = S or G; X$_{13}$ = Y or N; X$_{14}$ = Y or W; X$_{15}$ = I or W; X$_{16}$ = H, G or S; X$_{17}$ = I or absent; X$_{18}$ = I, S or E; X$_{19}$ = N or I; X$_{20}$ = P, Y or N; X$_{21}$ = G, Y or H; X$_{22}$ = N or S; X$_{23}$ = D or S; X$_{24}$ = N or Y; X$_{25}$ = A or N; X$_{26}$ = Q or P, X$_{27}$ = R or S, X$_{28}$ = F or L; X$_{29}$ = Q or K; X$_{30}$ = G or S; X$_{31}$ = E or absent; X$_{32}$ = I, Y or M; X$_{33}$ = A or G; X$_{34}$ = S, P, I or A, X$_{35}$ = Y, D or N; X$_{36}$ = G or S; X$_{37}$ = G or

S; $X_{38}$ = L or absent; $X_{39}$ = V or Y; $X_{40}$ = A, D or G; $X_{41}$ = F, M or Y; $X_{42}$ = D or absent; and $X_{43}$ = I, V or absent.

In some examples the antibody, or antigen binding fragment, may comprise at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYYIH (SEQ ID NO:18)
HC-CDR2: IINPGNGDTNYAQRFQG (SEQ ID NO:19)
HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20).

In some examples the antibody, or antigen binding fragment, may comprise at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: SSSYYWG (SEQ ID NO:24)
HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25)
HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26).

In some examples the antibody, or antigen binding fragment, may comprise at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYYWS (SEQ ID NO:30)
HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31)
HC-CDR3: MGINSGGYLYGMDV (SEQ ID NO:32).

In some examples the antibody, or antigen binding fragment, may comprise at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: SSNWWS (SEQ ID NO:35)
HC-CDR2: EIYHSGSTNYNPSLKS (SEQ ID NO:36)
HC-CDR3: MGANSGGYLYGMDV (SEQ ID NO:37).

The antibody may comprise at least one light chain variable region ($V_L$) comprising the amino acid sequence of one of SEQ ID NOs 1, 15, 16, 17; or 2, 21, 22, 23; or 3, 27, 28, 29; or 4, 33, 34, 35, or an amino acid sequence having at least 70%, more preferably one of at least 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%, sequence identity to SEQ ID NOs 1, 15, 16, 17; or 2, 21, 22, 23; or 3, 27, 28, 29; or 4, 33, 34, 35.

The antibody may comprise at least one heavy chain variable region ($V_H$) comprising the amino acid sequence of one of SEQ ID NOs 5, 18, 19, 20; or 6, 24, 25, 26; or 7, 30, 31, 32; or 8, 36, 37, 38, or an amino acid sequence having at least 70%, more preferably one of at least 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%, sequence identity to SEQ ID NOs 5, 18, 19, 20; or 6, 24, 25, 26; or 7, 30, 31, 32; or 8, 36, 37, 38.

The antibody may comprise at least one light chain variable region ($V_L$) comprising the amino acid sequence of one of SEQ ID NOs 1, 15, 16, 17; or 2, 21, 22, 23; or 3, 27, 28, 29; or 4, 33, 34, 35, or an amino acid sequence having at least 70%, more preferably one of at least 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%, sequence identity to SEQ ID NOs 1, 15, 16, 17; or 2, 21, 22, 23; or 3, 27, 28, 29; or 4, 33, 34, 35, and at least one heavy chain variable region ($V_H$) comprising the amino acid sequence of one of SEQ ID NOs 5, 18, 19, 20; or 6, 24, 25, 26; or 7, 30, 31, 32; or 8, 36, 37, 38, or an amino acid sequence having at least 70%, more preferably one of at least 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%, sequence identity to SEQ ID NOs 5, 18, 19, 20; or 6, 24, 25, 26; or 7, 30, 31, 32; or 8, 36, 37, 38.

An antibody, antigen binding fragment or polypeptide provided herein, may optionally bind HER2, optionally human or murine HER2. The antibody, antigen binding fragment, polypeptide may bind specifically to human, rhesus macaque and/or murine HER2. The antibody, antigen binding fragment or polypeptide may optionally have amino acid sequence components as described above. The antibody, antigen binding fragment or polypeptide may be an IgG or derived from an IgG. The antibody, antigen binding fragment or polypeptide may have a molecular weight of about 140 to 160kDa, preferably about 150kDa. In one example an *in vitro* complex, optionally isolated, comprising an antibody, antigen binding fragment, or polypeptide as described herein, bound to HER2 is provided.

In one example of the present disclosure an isolated light chain variable region polypeptide is provided, the light chain variable region polypeptide comprising the following CDRs:

LC-CDR1: $GLSSGSVSTX_1X_2YX_3S$ (SEQ ID NO:9)

LC-CDR2: $X_4TNX_5RSS$ (SEQ ID NO:10)

LC-CDR3: $X_6LYX_7GX_8GIX_9V$ (SEQ ID NO:11);

where $X_1$ = G or S; $X_2$ = H or Y; $X_3$ = A or P; $X_4$ = N, S or T; $X_5$ = T, S or I; $X_6$ = V or M; $X_7$ = V or M; $X_8$ = D or S; and $X_9$ = W or S.

In some examples the isolated light chain variable region polypeptide is provided in combination with a heavy chain variable region polypeptide as described herein.

In some examples LC-CDR1 is one of GLSSGSVSTGHYAS (SEQ ID NO:15), GLSSGSVSTGYYPS (SEQ ID NO:21), or GLSSGSVSTSYYPS (SEQ ID NO:27),. In some examples LC-CDR2 is one of NTNTRSS (SEQ ID NO:16), STNSRSS (SEQ ID NO:22), TTNIRSS (SEQ ID NO:28), or STNTRSS (SEQ ID NO:33). In some examples LC-CDR3 is one of VLYVGDGIWV (SEQ ID NO:17), VLYMGSGISV (SEQ ID NO:23); MLYMGSGIWV (SEQ ID NO:29), or VLYMGSGIWV (SEQ ID NO:34). In some examples the isolated light chain variable region polypeptide is capable of binding to HER2.

In one example of the present disclosure an light chain variable region polypeptide is provided, comprising an amino acid sequence having at least 85% sequence identity to the light chain sequence: SEQ ID NO:1,

2, 3, or 4 (Figure 1A to 1D). In some examples the isolated light chain variable region polypeptide is capable of binding to HER2.

In one example of the present disclosure an isolated heavy chain variable region polypeptide is provided, the heavy chain variable region polypeptide comprising the following CDRs:

HC-CDR1: $X_{10}X_{11}X_{12}X_{13}X_{14}X_{15}X_{16}$ (SEQ ID NO:12);

HC-CDR2: $X_{17}X_{18}X_{19}X_{20}X_{21}X_{22}GX_{23}TX_{24}YX_{25}X_{26}X_{27}X_{28}X_{29}X_{30}$ (SEQ ID NO:13);

HC-CDR3: $X_{31}X_{32}X_{33}X_{34}X_{35}SX_{36}X_{37}YX_{38}X_{39}X_{40}X_{41}X_{42}X_{43}$ (SEQ ID NO:14);

where $X_{10}$ = S or absent; $X_{11}$ = S or absent; $X_{12}$ = S or G; $X_{13}$ = Y or N; $X_{14}$ = Y or W; $X_{15}$ = I or W; $X_{16}$ = H, G or S; $X_{17}$ = I or absent; $X_{18}$ = I, S or E; $X_{19}$ = N or I; $X_{20}$ = P, Y or N; $X_{21}$ = G, Y or H; $X_{22}$ = N or S; $X_{23}$ = D or S; $X_{24}$ = N or Y; $X_{25}$ = A or N; $X_{26}$ = Q or P, $X_{27}$ = R or S, $X_{28}$ = F or L; $X_{29}$ = Q or K; $X_{30}$ = G or S; $X_{31}$ = E or absent; $X_{32}$ = I, Y or M; $X_{33}$ = A or G; $X_{34}$ = S, P, I or A, $X_{35}$ = Y, D or N; $X_{36}$ = G or S; $X_{37}$ = G or S; $X_{38}$ = L or absent; $X_{39}$ = V or Y; $X_{40}$ = A, D or G; $X_{41}$ = F, M or Y; $X_{42}$ = D or absent; and $X_{43}$ = I, V or absent.

In some examples the isolated heavy chain variable region polypeptide is provided in combination with a light chain variable region polypeptide as described herein.

In some examples HC-CDR1 is one of SYYIH (SEQ ID NO:18), SSSYYWG (SEQ ID NO:24), GYYWS (SEQ ID NO:30), or SSNWWS (SEQ ID NO:35). In some examples HC-CDR2 is one of IINPGNGDTNYAQRFQG (SEQ ID NO:19), SIYYSGSTYYNPSLKS (SEQ ID NO:25), EINHSGSTNYNPSLKS (SEQ ID NO:31), or EIYHSGSTNYNPSLKS (SEQ ID NO:36). In some examples HC-CDR3 is one of EIASYSGSYYDY (SEQ ID NO:20), YAPDSSGYLVAFDI (SEQ ID NO:26), MGINSGGYLYGMDV (SEQ ID NO:32), or MGANSGGYLYGMDV (SEQ ID NO:37). In some examples the isolated heavy chain variable region polypeptide is capable of binding to HER2.

In one example of the present disclosure an isolated heavy chain variable region polypeptide is provided, comprising an amino acid sequence having at least 85% sequence identity to the heavy chain sequence of SEQ ID NO:5, 6, 7, or 8 (Figure 2A to 2D). In some examples the isolated heavy chain variable region polypeptide is capable of binding to HER2.

In one example of the present disclosure an antibody, or antigen binding fragment, is provided, the antibody, or antigen binding fragment, comprising a heavy chain and a light chain variable region sequence, wherein:

the light chain comprises a LC-CDR1, LC-CDR2, LC-CDR3, having at least 85% overall sequence identity to LC-CDR1: one of GLSSGSVSTX$_1$X$_2$YX$_3$S (SEQ ID NO:9), GLSSGSVSTGHYAS (SEQ ID NO:15), GLSSGSVSTGYYPS (SEQ ID NO:21), or GLSSGSVSTSYYPS (SEQ ID NO:27), LC-CDR2: one of X$_4$TNX$_5$RSS (SEQ ID NO:10), NTNTRSS (SEQ ID NO:16), STNSRSS (SEQ ID NO:22), TTNIRSS (SEQ ID NO:28), or STNTRSS (SEQ ID NO:33), and LC-CDR3: one of X$_6$LYX$_7$GX$_8$GIX$_9$V (SEQ ID NO:11), VLYVGDGIWV (SEQ ID NO:17), VLYMGSGISV (SEQ ID NO:23); MLYMGSGIWV (SEQ ID NO:29), or

VLYMGSGIWV (SEQ ID NO:34), respectively, where $X_1$ = G or S; $X_2$ = H or Y; $X_3$ = A or P; $X_4$ = N, S or T; $X_5$ = T, S or I; $X_6$ = V or M; $X_7$ = V or M; $X_8$ = D or S; and $X_9$ = W or S, and;
the heavy chain comprises a HC-CDR1, HC-CDR2, HC-CDR3, having at least 85% overall sequence identity to HC-CDR1: one of $X_{10}X_{11}X_{12}X_{13}X_{14}X_{15}X_{16}$ (SEQ ID NO:12), SYYIH (SEQ ID NO:18), SSSYYWG (SEQ ID NO:24), GYYWS (SEQ ID NO:30), or SSNWWS (SEQ ID NO:35), HC-CDR2: one of $X_{17}X_{18}X_{19}X_{20}X_{21}X_{22}GX_{23}TX_{24}YX_{25}X_{26}X_{27}X_{28}X_{29}X_{30}$ (SEQ ID NO:13), IINPGNGDTNYAQRFQG (SEQ ID NO:19), SIYYSGSTYYNPSLKS (SEQ ID NO:25), EINHSGSTNYNPSLKS (SEQ ID NO:31), or EIYHSGSTNYNPSLKS (SEQ ID NO:36), and HC-CDR3: one of $X_{31}X_{32}X_{33}X_{34}X_{35}SX_{36}X_{37}YX_{38}X_{39}X_{40}X_{41}X_{42}X_{43}$ (SEQ ID NO:14), EIASYSGSYYDY (SEQ ID NO:20), YAPDSSGYLVAFDI (SEQ ID NO:26), MGINSGGYLYGMDV (SEQ ID NO:32), or MGANSGGYLYGMDV (SEQ ID NO:37), respectively, where $X_{10}$ = S or absent; $X_{11}$ = S or absent; $X_{12}$ = S or G; $X_{13}$ = Y or N; $X_{14}$ = Y or W; $X_{15}$ = I or W; $X_{16}$ = H, G or S; $X_{17}$ = I or absent; $X_{18}$ = I, S or E; $X_{19}$ = N or I; $X_{20}$ = P, Y or N; $X_{21}$ = G, Y or H; $X_{22}$ = N or S; $X_{23}$ = D or S; $X_{24}$ = N or Y; $X_{25}$ = A or N; $X_{26}$ = Q or P, $X_{27}$ = R or S, $X_{28}$ = F or L; $X_{29}$ = Q or K; $X_{30}$ = G or S; $X_{31}$ = E or absent; $X_{32}$ = I, Y or M; $X_{33}$ = A or G; $X_{34}$ = S, P, I or A, $X_{35}$ = Y, D or N; $X_{36}$ = G or S; $X_{37}$ = G or S; $X_{38}$ = L or absent; $X_{39}$ = V or Y; $X_{40}$ = A, D or G; $X_{41}$ = F, M or Y; $X_{42}$ = D or absent; and $X_{43}$ = I, V or absent.

In some examples the degree of sequence identity may be one of 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%.

In another example of the present disclosure an antibody or antigen binding fragment which is capable of binding to HER2, optionally isolated, is provided comprising a heavy chain and a light chain variable region sequence, wherein:
the light chain sequence has at least 85% sequence identity to the light chain sequence of SEQ ID NO:1, 2, 3, or 4 (Figure 1A to 1D), and;
the heavy chain sequence has at least 85% sequence identity to the heavy chain sequence of SEQ ID NO:5, 6, 7, or 8 (Figure 2A to 2D).

In some examples the degree of sequence identity may be one of 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%.

In another example of the present disclosure an antibody, antigen binding fragment or polypeptide which is capable of binding to HER2, optionally isolated, is provided having the amino acid sequences i) to iii), or the amino acid sequences iv) to vi), or preferably the amino acid sequences i) to vi):
i) LC-CDR1: one of RSSQSLLHSNGFNYLD (SEQ ID NO:74), RSSQSLLHSDGNKYLD (SEQ ID NO:84), RSSQSLVYSDGNTYLN (SEQ ID NO:93), RSSQSLLHSNGYNYLD (SEQ ID NO:102), RSSQSLLHSNGNTYLD (SEQ ID NO:110), RASQSVRNNLA (SEQ ID NO:120), GSTTGAVTSGHYPS (SEQ ID NO:138), RASQSVSSSYLA (SEQ ID NO:161), RSSQSLQHSNGYQYLD (SEQ ID NO:170), TGRSANIGGFDVQ (SEQ ID NO:186), ALTSGSVSTSYYPS (SEQ ID NO:194), TSSQSLVYSDGNTYLN (SEQ ID NO:211), RSSQSLLRSDGYNFVD (SEQ ID NO:217), RASQGISSWLA (SEQ ID NO:226),

RASRSVGKYLA (SEQ ID NO:247), GLSSGSVSTTYYPS (SEQ ID NO:255), TLRSGINVGTYRIY (SEQ ID NO:261), RASQSVSSYLA (SEQ ID NO:270), GLTSGAVSSSYYPS (SEQ ID NO:279), TGNNNNVGFAGAA (SEQ ID NO:287);

ii) LC-CDR2: one of LGSNRAS (SEQ ID NO:75), KVSNRDS (SEQ ID NO:94), SGSNRAS (SEQ ID NO:111); YASTRAT (SEQ ID NO:121), STSNKHS (SEQ ID NO:139), LGSHRAS (SEQ ID NO:146), LGSNRAP (SEQ ID NO:155), GASSRAT (SEQ ID NO:162), LGSFRAS (SEQ ID NO:171), DNSNRPS (SEQ ID NO:187), STNLRSS (SEQ ID NO:195), KVSDRDS (SEQ ID NO:204), KVSKRDS (SEQ ID NO:212), LGSDRAS (SEQ ID NO:218), AASSLQS (SEQ ID NO:227), YKSDSDKQQGS (SEQ ID NO:262), DASTRAS (SEQ ID NO:248), STNTRSS (SEQ ID NO:33), DASNRAT (SEQ ID NO:271), NTDIRFS (SEQ ID NO:280), RNNDRPS (SEQ ID NO:288);

iii) LC-CDR3: one of MQGLQTPYT (SEQ ID NO:76), MLGTHWPPMYI (SEQ ID NO:85), MQGTHWPLT (SEQ ID NO:95), MQALQTPWT (SEQ ID NO:103), MQGTHWPPT (SEQ ID NO:112), QHYGSSRT (SEQ ID NO:122), MAGLQTPRLT (SEQ ID NO:130), LLYYGGARV (SEQ ID NO:140), MQALQTPLT (SEQ ID NO:147), QQYGSSPRT (SEQ ID NO:163), MHALSTPPWT (SEQ ID NO:172), MQGTHWPGT (SEQ ID NO:180), GTWDSYLNIWV (SEQ ID NO:188), ELYMGSGISV (SEQ ID NO:196), MQGTHWPQT (SEQ ID NO:205), MQALQTPRT (SEQ ID NO:219), QQANSFPPT (SEQ ID NO:228), QQYGSSSA (SEQ ID NO:233), MIWHSSAWV (SEQ ID NO:263), QHYGTSPPFI (SEQ ID NO:249), VLYMGNGISV (SEQ ID NO:256), QQRSNWPLT (SEQ ID NO:272), VLYMGSGISV (SEQ ID NO:23), SAWDSSLKVQV (SEQ ID NO:289);

iv) HC-CDR1: one of SYGMH (SEQ ID NO:77), SAAAAWN (SEQ ID NO:86), SYAMH (SEQ ID NO:96), SFAMN (SEQ ID NO:113), SYGIS (SEQ ID NO:123), SYAMS (SEQ ID NO:131), SYAIS (SEQ ID NO:148), TYTMH (SEQ ID NO:173), GYYWS (SEQ ID NO:30), SYWIG (SEQ ID NO:197), NYGMH (SEQ ID NO:234), SYAIH (SEQ ID NO:241), SSSYYWG (SEQ ID NO:24), DYYIH (SEQ ID NO:281);

v) HC-CDR2: one of VISYDGSNKYYADSVKG (SEQ ID NO:78), RTYYRSKWYSEYAVSVKS (SEQ ID NO:87), WINAGNGNTKYSQKFQG (SEQ ID NO:104), TIGGSGDSTFYADPVKG (SEQ ID NO:114), WISAYNGNTNYAQKLQG (SEQ ID NO:124), AISGSGGSTYYADSVKG (SEQ ID NO:132), GIIPIFGTANYAQKFQG (SEQ ID NO:149), GINWNGGSTGYADSVKG (SEQ ID NO:164), WITPGNGNTHYSQNFQG (SEQ ID NO:174), EINHSGSTNYNPSLKS (SEQ ID NO:31), IIYPGDSDTRYSPSFQG (SEQ ID NO:198), AISSNGGSTYYADSVKG (SEQ ID NO:206), VISYDESNKYYADSVKG (SEQ ID NO:220), FISYDGTNKYYADSVKG (SEQ ID NO:235), SIYYSGSTYYNPSLKS (SEQ ID NO:25), VIWYDGSNKYYADSVKG (SEQ ID NO:264), SISSSSSYIYYADSVKG (SEQ ID NO:273), WVSAYNGDTNYAQKFQG (SEQ ID NO:282);

vi) HC-CDR3: one of DLFAVVGYYYYYGMDV (SEQ ID NO:79), GSIFDV (SEQ ID NO:88), SRGYYGMDV (SEQ ID NO:97), GGYLVGY (SEQ ID NO:105), AYGSGGHYFFAY (SEQ ID NO:115), DWGSSWSDY (SEQ ID NO:125), TYYDFWSGRVGAFDI (SEQ ID NO:133), DRGYYGMDV (SEQ ID NO:141), GRGSGYPDTWFWFDP (SEQ ID NO:150), SYGSGSYRSHAFDI (SEQ ID NO:156), GLVPAASMDV (SEQ ID NO:165), SRVGALDY (SEQ ID NO:175), SRGYSGYDN (SEQ ID NO:181), GLPYYYFDY (SEQ ID NO:189), LGYGVPLPEYFDL (SEQ ID NO:199), EPSGSWSYLYYYYYGMDV (SEQ ID NO:221), HYGDYYYYYGMDV (SEQ ID NO:236), VYGYGLHYYGMDV (SEQ ID NO:242),

SYDSSGYYYFDY (SEQ ID NO:250), YAPDSSGYLVAFDI (SEQ ID NO:26), MTTEDY (SEQ ID NO:265), DGSAWSRPY (SEQ ID NO:274), EIASYSGSYYDY (SEQ ID NO:20), GADWNSDY (SEQ ID NO:290);

or a variant thereof in which one or two or three amino acids in one or more of the sequences (i) to (vi) are replaced with another amino acid.

In another example of the present disclosure an antibody, antigen binding fragment, or polypeptide which is capable of binding to HER2, optionally isolated, is provided comprising a heavy chain and a light chain variable region sequence, wherein:

the light chain comprises a LC-CDR1, LC-CDR2, LC-CDR3, having at least 85% overall sequence identity to LC-CDR1: one of RSSQSLLHSNGFNYLD (SEQ ID NO:74), RSSQSLLHSDGNKYLD (SEQ ID NO:84), RSSQSLVYSDGNTYLN (SEQ ID NO:93), RSSQSLLHSNGYNYLD (SEQ ID NO:102), RSSQSLLHSNGNTYLD (SEQ ID NO:110), RASQSVRNNLA (SEQ ID NO:120), GSTTGAVTSGHYPS (SEQ ID NO:138), RASQSVSSSYLA (SEQ ID NO:161), RSSQSLQHSNGYQYLD (SEQ ID NO:170), TGRSANIGGFDVQ (SEQ ID NO:186), ALTSGSVSTSYYPS (SEQ ID NO:194), TSSQSLVYSDGNTYLN (SEQ ID NO:211), RSSQSLLRSDGYNFVD (SEQ ID NO:217), RASQGISSWLA (SEQ ID NO:226), RASRSVGKYLA (SEQ ID NO:247), GLSSGSVSTTYYPS (SEQ ID NO:255), TLRSGINVGTYRIY (SEQ ID NO:261), RASQSVSSYLA (SEQ ID NO:270), GLTSGAVSSSYYPS (SEQ ID NO:279), TGNNNNVGFAGAA (SEQ ID NO:287);

LC-CDR2: one of LGSNRAS (SEQ ID NO:75), KVSNRDS (SEQ ID NO:94), SGSNRAS (SEQ ID NO:111); YASTRAT (SEQ ID NO:121), STSNKHS (SEQ ID NO:139), LGSHRAS (SEQ ID NO:146), LGSNRAP (SEQ ID NO:155), GASSRAT (SEQ ID NO:162), LGSFRAS (SEQ ID NO:171), DNSNRPS (SEQ ID NO:187), STNLRSS (SEQ ID NO:195), KVSDRDS (SEQ ID NO:204), KVSKRDS (SEQ ID NO:212), LGSDRAS (SEQ ID NO:218), AASSLQS (SEQ ID NO:227), YKSDSDKQQGS (SEQ ID NO:262), DASTRAS (SEQ ID NO:248), STNTRSS (SEQ ID NO:33), DASNRAT (SEQ ID NO:271), NTDIRFS (SEQ ID NO:280), RNNDRPS (SEQ ID NO:288);

LC-CDR3: one of MQGLQTPYT (SEQ ID NO:76), MLGTHWPPMYI (SEQ ID NO:85), MQGTHWPLT (SEQ ID NO:95), MQALQTPWT (SEQ ID NO:103), MQGTHWPPT (SEQ ID NO:112), QHYGSSRT (SEQ ID NO:122), MAGLQTPRLT (SEQ ID NO:130), LLYYGGARV (SEQ ID NO:140), MQALQTPLT (SEQ ID NO:147), QQYGSSPRT (SEQ ID NO:163), MHALSTPPWT (SEQ ID NO:172), MQGTHWPGT (SEQ ID NO:180), GTWDSYLNIWV (SEQ ID NO:188), ELYMGSGISV (SEQ ID NO:196), MQGTHWPQT (SEQ ID NO:205), MQALQTPRT (SEQ ID NO:219), QQANSFPPT (SEQ ID NO:228), QQYGSSSA (SEQ ID NO:233), MIWHSSAWV (SEQ ID NO:263), QHYGTSPPFI (SEQ ID NO:249), VLYMGNGISV (SEQ ID NO:256), QQRSNWPLT (SEQ ID NO:272), VLYMGSGISV (SEQ ID NO:23), SAWDSSLKVQV (SEQ ID NO:289), and;

the heavy chain comprises a HC-CDR1, HC-CDR2, HC-CDR3, having at least 85% overall sequence identity to HC-CDR1: one of SYGMH (SEQ ID NO:77), SAAAAWN (SEQ ID NO:86), SYAMH (SEQ ID NO:96), SFAMN (SEQ ID NO:113), SYGIS (SEQ ID NO:123), SYAMS (SEQ ID NO:131), SYAIS (SEQ ID NO:148), TYTMH (SEQ ID NO:173), GYYWS (SEQ ID NO:30), SYWIG (SEQ ID NO:197), NYGMH (SEQ ID NO:234), SYAIH (SEQ ID NO:241), SSSYYWG (SEQ ID NO:24), DYYIH (SEQ ID NO:281);

HC-CDR2: one of VISYDGSNKYYADSVKG (SEQ ID NO:78), RTYYRSKWYSEYAVSVKS (SEQ ID NO:87), WINAGNGNTKYSQKFQG (SEQ ID NO:104), TIGGSGDSTFYADPVKG (SEQ ID NO:114), WISAYNGNTNYAQKLQG (SEQ ID NO:124), AISGSGGSTYYADSVKG (SEQ ID NO:132), GIIPIFGTANYAQKFQG (SEQ ID NO:149), GINWNGGSTGYADSVKG (SEQ ID NO:164), WITPGNGNTHYSQNFQG (SEQ ID NO:174), EINHSGSTNYNPSLKS (SEQ ID NO:31), IIYPGDSDTRYSPSFQG (SEQ ID NO:198), AISSNGGSTYYADSVKG (SEQ ID NO:206), VISYDESNKYYADSVKG (SEQ ID NO:220), FISYDGTNKYYADSVKG (SEQ ID NO:235), SIYYSGSTYYNPSLKS (SEQ ID NO:25), VIWYDGSNKYYADSVKG (SEQ ID NO:264), SISSSSSYIYYADSVKG (SEQ ID NO:273), WVSAYNGDTNYAQKFQG (SEQ ID NO:282);

HC-CDR3: one of DLFAVVGYYYYYGMDV (SEQ ID NO:79), GSIFDV (SEQ ID NO:88), SRGYYGMDV (SEQ ID NO:97), GGYLVGY (SEQ ID NO:105), AYGSGGHYFFAY (SEQ ID NO:115), DWGSSWSDY (SEQ ID NO:125), TYYDFWSGRVGAFDI (SEQ ID NO:133), DRGYYGMDV (SEQ ID NO:141), GRGSGYPDTWFWFDP (SEQ ID NO:150), SYGSGSYRSHAFDI (SEQ ID NO:156), GLVPAASMDV (SEQ ID NO:165), SRVGALDY (SEQ ID NO:175), SRGYSGYDN (SEQ ID NO:181), GLPYYYFDY (SEQ ID NO:189), LGYGVPLPEYFDL (SEQ ID NO:199), EPSGSWSYLYYYYYGMDV (SEQ ID NO:221), HYGDYYYYYGMDV (SEQ ID NO:236), VYGYGLHYYGMDV (SEQ ID NO:242), SYDSSGYYYFDY (SEQ ID NO:250), YAPDSSGYLVAFDI (SEQ ID NO:26), MTTEDY (SEQ ID NO:265), DGSAWSRPY (SEQ ID NO:274), EIASYSGSYYDY (SEQ ID NO:20), GADWNSDY (SEQ ID NO:290).

In some examples the degree of sequence identity may be one of 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%.

In some examples the antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGFNYLD (SEQ ID NO:74), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQGLQTPYT (SEQ ID NO:76). In some examples the antibody, antigen binding fragment or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: DLFAVVGYYYYYGMDV (SEQ ID NO:79). In some examples the antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGFNYLD (SEQ ID NO:74), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQGLQTPYT (SEQ ID NO:76), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: DLFAVVGYYYYYGMDV (SEQ ID NO:79).

In some examples the antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSDGNKYLD (SEQ ID NO:84), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MLGTHWPPMYI (SEQ ID NO:85). In some examples the antibody, antigen binding fragment or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SAAAAWN (SEQ ID NO:86), HC-CDR2: RTYYRSKWYSEYAVSVKS (SEQ ID NO:87), HC-CDR3: GSIFDV (SEQ ID NO:88). In some examples the

antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSDGNKYLD (SEQ ID NO:84), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MLGTHWPPMYI (SEQ ID NO:85), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SAAAAWN (SEQ ID NO:86), HC-CDR2: RTYYRSKWYSEYAVSVKS (SEQ ID NO:87), HC-CDR3: GSIFDV (SEQ ID NO:88).

In some examples the antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSNRDS (SEQ ID NO:94), LC-CDR3: MQGTHWPLT (SEQ ID NO:95). In some examples the antibody, antigen binding fragment or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97). In some examples the antibody, antigen binding fragment or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSNRDS (SEQ ID NO:94), LC-CDR3: MQGTHWPLT (SEQ ID NO:95), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQALQTPWT (SEQ ID NO:103). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: WINAGNGNTKYSQKFQG (SEQ ID NO:104), HC-CDR3: GGYLVGY (SEQ ID NO:105). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQALQTPWT (SEQ ID NO:103), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: WINAGNGNTKYSQKFQG (SEQ ID NO:104), HC-CDR3: GGYLVGY (SEQ ID NO:105).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGNTYLD (SEQ ID NO:110), LC-CDR2: SGSNRAS (SEQ ID NO:111), LC-CDR3: MQGTHWPPT (SEQ ID NO:112). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SFAMN (SEQ ID NO:113), HC-CDR2: TIGGSGDSTFYADPVKG (SEQ ID NO:114), HC-CDR3: AYGSGGHYFFAY (SEQ ID NO:115). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGNTYLD (SEQ ID NO:110), LC-CDR2: SGSNRAS (SEQ ID NO:111), LC-CDR3: MQGTHWPPT (SEQ ID NO:112), and at least one heavy chain

variable region incorporating the following CDRs: HC-CDR1: SFAMN (SEQ ID NO:113), HC-CDR2: TIGGSGDSTFYADPVKG (SEQ ID NO:114), HC-CDR3: AYGSGGHYFFAY (SEQ ID NO:115).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVRNNLA (SEQ ID NO:120), LC-CDR2: YASTRAT (SEQ ID NO:121), LC-CDR3: QHYGSSRT (SEQ ID NO:122). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGIS (SEQ ID NO:123), HC-CDR2: WISAYNGNTNYAQKLQG (SEQ ID NO:124), HC-CDR3: DWGSSWSDY (SEQ ID NO:125). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVRNNLA (SEQ ID NO:120), LC-CDR2: YASTRAT (SEQ ID NO:121), LC-CDR3: QHYGSSRT (SEQ ID NO:122), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGIS (SEQ ID NO:123), HC-CDR2: WISAYNGNTNYAQKLQG (SEQ ID NO:124), HC-CDR3: DWGSSWSDY (SEQ ID NO:125).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MAGLQTPRLT (SEQ ID NO:130). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: AISGSGGSTYYADSVKG (SEQ ID NO:132), HC-CDR3: TYYDFWSGRVGAFDI (SEQ ID NO:133). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MAGLQTPRLT (SEQ ID NO:130), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: AISGSGGSTYYADSVKG (SEQ ID NO:132), HC-CDR3: TYYDFWSGRVGAFDI (SEQ ID NO:133).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GSTTGAVTSGHYPS (SEQ ID NO:138), LC-CDR2: STSNKHS (SEQ ID NO:139), LC-CDR3: LLYYGGARV (SEQ ID NO:140). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: DRGYYGMDV (SEQ ID NO:141). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GSTTGAVTSGHYPS (SEQ ID NO:138), LC-CDR2: STSNKHS (SEQ ID NO:139), LC-CDR3: LLYYGGARV (SEQ ID NO:140), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: DRGYYGMDV (SEQ ID NO:141).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSHRAS (SEQ ID NO:146), LC-CDR3: MQALQTPLT (SEQ ID NO:147). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: GRGSGYPDTWFWFDP (SEQ ID NO:150). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSHRAS (SEQ ID NO:146), LC-CDR3: MQALQTPLT (SEQ ID NO:147), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: GRGSGYPDTWFWFDP (SEQ ID NO:150).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAP (SEQ ID NO:155), LC-CDR3: MQGTHWPLT (SEQ ID NO:95). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAP (SEQ ID NO:155), LC-CDR3: MQGTHWPLT (SEQ ID NO:95), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161), LC-CDR2: GASSRAT (SEQ ID NO:162), LC-CDR3: QQYGSSPRT (SEQ ID NO:163). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: GINWNGGSTGYADSVKG (SEQ ID NO:164), HC-CDR3: GLVPAASMDV (SEQ ID NO:165). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161), LC-CDR2: GASSRAT (SEQ ID NO:162), LC-CDR3: QQYGSSPRT (SEQ ID NO:163), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: GINWNGGSTGYADSVKG (SEQ ID NO:164), HC-CDR3: GLVPAASMDV (SEQ ID NO:165).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLQHSNGYQYLD (SEQ ID NO:170), LC-CDR2: LGSFRAS (SEQ ID NO:171), LC-CDR3: MHALSTPPWT (SEQ ID NO:172). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region

incorporating the following CDRs: HC-CDR1: TYTMH (SEQ ID NO:173), HC-CDR2: WITPGNGNTHYSQNFQG (SEQ ID NO:174), HC-CDR3: SRVGALDY (SEQ ID NO:175). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLQHSNGYQYLD (SEQ ID NO:170), LC-CDR2: LGSFRAS (SEQ ID NO:171), LC-CDR3: MHALSTPPWT (SEQ ID NO:172), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: TYTMH (SEQ ID NO:173), HC-CDR2: WITPGNGNTHYSQNFQG (SEQ ID NO:174), HC-CDR3: SRVGALDY (SEQ ID NO:175).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSNRDS (SEQ ID NO:94), LC-CDR3: MQGTHWPGT (SEQ ID NO:180). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYSGYDN (SEQ ID NO:181). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSNRDS (SEQ ID NO:94), LC-CDR3: MQGTHWPGT (SEQ ID NO:180), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYSGYDN (SEQ ID NO:181).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TGRSANIGGFDVQ (SEQ ID NO:186), LC-CDR2: DNSNRPS (SEQ ID NO:187), LC-CDR3: GTWDSYLNIWV (SEQ ID NO:188). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: GYYWS (SEQ ID NO:30), HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31), HC-CDR3: GLPYYYFDY (SEQ ID NO:189). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TGRSANIGGFDVQ (SEQ ID NO:186), LC-CDR2: DNSNRPS (SEQ ID NO:187), LC-CDR3: GTWDSYLNIWV (SEQ ID NO:188), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: GYYWS (SEQ ID NO:30), HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31), HC-CDR3: GLPYYYFDY (SEQ ID NO:189).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: ALTSGSVSTSYYPS (SEQ ID NO:194), LC-CDR2: STNLRSS (SEQ ID NO:195), LC-CDR3: ELYMGSGISV (SEQ ID NO:196). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYWIG (SEQ ID NO:197), HC-CDR2: IIYPGDSDTRYSPSFQG (SEQ ID NO:198), HC-CDR3: LGYGVPLPEYFDL (SEQ ID NO:199). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: ALTSGSVSTSYYPS (SEQ ID NO:194), LC-CDR2: STNLRSS

(SEQ ID NO:195), LC-CDR3: ELYMGSGISV (SEQ ID NO:196), and at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYWIG (SEQ ID NO:197), HC-CDR2: IIYPGDSDTRYSPSFQG (SEQ ID NO:198), HC-CDR3: LGYGVPLPEYFDL (SEQ ID NO:199).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSDRDS (SEQ ID NO:204), LC-CDR3: MQGTHWPQT (SEQ ID NO:205). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206), HC-CDR3: SRGYYGMDV (SEQ ID NO:97). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93), LC-CDR2: KVSDRDS (SEQ ID NO:204), LC-CDR3: MQGTHWPQT (SEQ ID NO:205), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206), HC-CDR3: SRGYYGMDV (SEQ ID NO:97).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TSSQSLVYSDGNTYLN (SEQ ID NO:211), LC-CDR2: KVSKRDS (SEQ ID NO:212), LC-CDR3: MQGTHWPLT (SEQ ID NO:95). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TSSQSLVYSDGNTYLN (SEQ ID NO:211), LC-CDR2: KVSKRDS (SEQ ID NO:212), LC-CDR3: MQGTHWPLT (SEQ ID NO:95), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLRSDGYNFVD (SEQ ID NO:217), LC-CDR2: LGSDRAS (SEQ ID NO:218), LC-CDR3: MQALQTPRT (SEQ ID NO:219). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDESNKYYADSVKG (SEQ ID NO:220), HC-CDR3: EPSGSWSYLYYYYYGMDV (SEQ ID NO:221). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLRSDGYNFVD (SEQ ID NO:217), LC-CDR2: LGSDRAS (SEQ ID NO:218), LC-CDR3: MQALQTPRT (SEQ ID NO:219), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDESNKYYADSVKG (SEQ ID NO:220), HC-CDR3: EPSGSWSYLYYYYYGMDV (SEQ ID NO:221).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQGISSWLA (SEQ ID NO:226), LC-CDR2: AASSLQS (SEQ ID NO:227), LC-CDR3: QQANSFPPT (SEQ ID NO:228). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQGISSWLA (SEQ ID NO:226), LC-CDR2: AASSLQS (SEQ ID NO:227), LC-CDR3: QQANSFPPT (SEQ ID NO:228), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SRGYYGMDV (SEQ ID NO:97).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161), LC-CDR2: GASSRAT (SEQ ID NO:162), LC-CDR3: QQYGSSSA (SEQ ID NO:233). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: NYGMH (SEQ ID NO:234), HC-CDR2: FISYDGTNKYYADSVKG (SEQ ID NO:235), HC-CDR3: HYGDYYYYYGMDV (SEQ ID NO:236). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161), LC-CDR2: GASSRAT (SEQ ID NO:162), LC-CDR3: QQYGSSSA (SEQ ID NO:233), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: NYGMH (SEQ ID NO:234), HC-CDR2: FISYDGTNKYYADSVKG (SEQ ID NO:235), HC-CDR3: HYGDYYYYYGMDV (SEQ ID NO:236).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQGTHWPGT (SEQ ID NO:180). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIH (SEQ ID NO:241), HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206), HC-CDR3: VYGYGLHYYGMDV (SEQ ID NO:242). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAS (SEQ ID NO:75), LC-CDR3: MQGTHWPGT (SEQ ID NO:180), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIH (SEQ ID NO:241), HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206), HC-CDR3: VYGYGLHYYGMDV (SEQ ID NO:242).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASRSVGKYLA (SEQ ID NO:247), LC-CDR2: DASTRAS (SEQ ID NO:248), LC-CDR3: QHYGTSPPFI (SEQ ID NO:249). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region

incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: SYDSSGYYYFDY (SEQ ID NO:250). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASRSVGKYLA (SEQ ID NO:247), LC-CDR2: DASTRAS (SEQ ID NO:248), LC-CDR3: QHYGTSPPFI (SEQ ID NO:249), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: SYDSSGYYYFDY (SEQ ID NO:250).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GLSSGSVSTTYYPS (SEQ ID NO:255), LC-CDR2: STNTRSS (SEQ ID NO:33), LC-CDR3: VLYMGNGISV (SEQ ID NO:256). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SSSYYWG (SEQ ID NO:24), HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25), HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GLSSGSVSTTYYPS (SEQ ID NO:255), LC-CDR2: STNTRSS (SEQ ID NO:33), LC-CDR3: VLYMGNGISV (SEQ ID NO:256), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SSSYYWG (SEQ ID NO:24), HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25), HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TLRSGINVGTYRIY (SEQ ID NO:261), LC-CDR2: YKSDSDKQQGS (SEQ ID NO:262), LC-CDR3: MIWHSSAWV (SEQ ID NO:263). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VIWYDGSNKYYADSVKG (SEQ ID NO:264), HC-CDR3: MTTEDY (SEQ ID NO:265). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: LC-CDR1: TLRSGINVGTYRIY (SEQ ID NO:261), LC-CDR2: YKSDSDKQQGS (SEQ ID NO:262), LC-CDR3: MIWHSSAWV (SEQ ID NO:263), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYGMH (SEQ ID NO:77), HC-CDR2: VIWYDGSNKYYADSVKG (SEQ ID NO:264), HC-CDR3: MTTEDY (SEQ ID NO:265).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSYLA (SEQ ID NO:270), LC-CDR2: DASNRAT (SEQ ID NO:271), LC-CDR3: QQRSNWPLT (SEQ ID NO:272). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: SISSSSSYIYYADSVKG (SEQ ID NO:273), HC-CDR3: DGSAWSRPY (SEQ ID NO:274). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RASQSVSSYLA (SEQ ID NO:270), LC-CDR2: DASNRAT (SEQ ID NO:271), LC-CDR3:

QQRSNWPLT (SEQ ID NO:272), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMS (SEQ ID NO:131), HC-CDR2: SISSSSSYIYYADSVKG (SEQ ID NO:273), HC-CDR3: DGSAWSRPY (SEQ ID NO:274).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GLTSGAVSSSYYPS (SEQ ID NO:279), LC-CDR2: NTDIRFS (SEQ ID NO:280), LC-CDR3: VLYMGSGISV (SEQ ID NO:23). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: DYYIH (SEQ ID NO:281), HC-CDR2: WVSAYNGDTNYAQKFQG (SEQ ID NO:282), HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: GLTSGAVSSSYYPS (SEQ ID NO:279), LC-CDR2: NTDIRFS (SEQ ID NO:280), LC-CDR3: VLYMGSGISV (SEQ ID NO:23), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: DYYIH (SEQ ID NO:281), HC-CDR2: WVSAYNGDTNYAQKFQG (SEQ ID NO:282), HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TGNNNNVGFAGAA (SEQ ID NO:287), LC-CDR2: RNNDRPS (SEQ ID NO:288), LC-CDR3: SAWDSSLKVQV (SEQ ID NO:289). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: GADWNSDY (SEQ ID NO:290). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: TGNNNNVGFAGAA (SEQ ID NO:287), LC-CDR2: RNNDRPS (SEQ ID NO:288), LC-CDR3: SAWDSSLKVQV (SEQ ID NO:289), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAIS (SEQ ID NO:148), HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149), HC-CDR3: GADWNSDY (SEQ ID NO:290).

In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAP (SEQ ID NO:155), LC-CDR3: MQGTHWPLT (SEQ ID NO:95). In some examples the antibody, antigen binding fragment, or polypeptide has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156). In some examples the antibody, antigen binding fragment, or polypeptide has at least one light chain variable region incorporating the following CDRs: LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102), LC-CDR2: LGSNRAP (SEQ ID NO:155), LC-CDR3: MQGTHWPLT (SEQ ID NO:95), and has at least one heavy chain variable region incorporating the following CDRs: HC-CDR1: SYAMH (SEQ ID NO:96), HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78), HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156).

In another example of the present disclosure an antibody, antigen binding fragment, or polypeptide which is capable of binding to HER2, optionally isolated, is provided comprising a heavy chain and a light chain variable region sequence, wherein:

the light chain sequence has at least 85% sequence identity to the light chain sequence of SEQ ID NO: 72, 82, 91, 100, 108, 118, 128, 136, 144, 153, 159, 168, 178, 184, 192, 202, 209, 215, 224, 231, 239, 245, 253, 259, 268, 277, 285, or 293, and;

the heavy chain sequence has at least 85% sequence identity to the heavy chain sequence of SEQ ID NO:73, 83, 92, 101, 109, 119, 129, 137, 145, 154, 160, 169, 179, 185, 193, 203, 210, 216, 225, 232, 240, 246, 254, 260, 269, 278, 286, or 294.

In some examples the degree of sequence identity may be one of 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%.

In some examples an isolated light chain variable region polypeptide is provided comprising the following CDRs:

LC-CDR1: one of RSSQSLLHSNGFNYLD (SEQ ID NO:74), RSSQSLLHSDGNKYLD (SEQ ID NO:84), RSSQSLVYSDGNTYLN (SEQ ID NO:93), RSSQSLLHSNGYNYLD (SEQ ID NO:102), RSSQSLLHSNGNTYLD (SEQ ID NO:110), RASQSVRNNLA (SEQ ID NO:120), GSTTGAVTSGHYPS (SEQ ID NO:138), RASQSVSSSYLA (SEQ ID NO:161), RSSQSLQHSNGYQYLD (SEQ ID NO:170), TGRSANIGGFDVQ (SEQ ID NO:186), ALTSGSVSTSYYPS (SEQ ID NO:194), TSSQSLVYSDGNTYLN (SEQ ID NO:211), RSSQSLLRSDGYNFVD (SEQ ID NO:217), RASQGISSWLA (SEQ ID NO:226), RASRSVGKYLA (SEQ ID NO:247), GLSSGSVSTTYYPS (SEQ ID NO:255), TLRSGINVGTYRIY (SEQ ID NO:261), RASQSVSSYLA (SEQ ID NO:270), GLTSGAVSSSYYPS (SEQ ID NO:279), or TGNNNNVGFAGAA (SEQ ID NO:287);

LC-CDR2: one of LGSNRAS (SEQ ID NO:75), KVSNRDS (SEQ ID NO:94), SGSNRAS (SEQ ID NO:111); YASTRAT (SEQ ID NO:121), STSNKHS (SEQ ID NO:139), LGSHRAS (SEQ ID NO:146), LGSNRAP (SEQ ID NO:155), GASSRAT (SEQ ID NO:162), LGSFRAS (SEQ ID NO:171), DNSNRPS (SEQ ID NO:187), STNLRSS (SEQ ID NO:195), KVSDRDS (SEQ ID NO:204), KVSKRDS (SEQ ID NO:212), LGSDRAS (SEQ ID NO:218), AASSLQS (SEQ ID NO:227), YKSDSDKQQGS (SEQ ID NO:262), DASTRAS (SEQ ID NO:248), STNTRSS (SEQ ID NO:33), DASNRAT (SEQ ID NO:271), NTDIRFS (SEQ ID NO:280), or RNNDRPS (SEQ ID NO:288);

LC-CDR3: one of MQGLQTPYT (SEQ ID NO:76), MLGTHWPPMYI (SEQ ID NO:85), MQGTHWPLT (SEQ ID NO:95), MQALQTPWT (SEQ ID NO:103), MQGTHWPPT (SEQ ID NO:112), QHYGSSRT (SEQ ID NO:122), MAGLQTPRLT (SEQ ID NO:130), LLYYGGARV (SEQ ID NO:140), MQALQTPLT (SEQ ID NO:147), QQYGSSPRT (SEQ ID NO:163), MHALSTPPWT (SEQ ID NO:172), MQGTHWPGT (SEQ ID NO:180), GTWDSYLNIWV (SEQ ID NO:188), ELYMGSGISV (SEQ ID NO:196), MQGTHWPQT (SEQ ID NO:205), MQALQTPRT (SEQ ID NO:219), QQANSFPPT (SEQ ID NO:228), QQYGSSSA (SEQ ID NO:233), MIWHSSAWV (SEQ ID NO:263), QHYGTSPPFI (SEQ ID NO:249), VLYMGNGISV (SEQ ID NO:256), QQRSNWPLT (SEQ ID NO:272), VLYMGSGISV (SEQ ID NO:23), or SAWDSSLKVQV (SEQ ID NO:289).

In some examples an isolated heavy chain variable region polypeptide is provided comprising the following CDRs:

HC-CDR1: one of SYGMH (SEQ ID NO:77), SAAAAWN (SEQ ID NO:86), SYAMH (SEQ ID NO:96), SFAMN (SEQ ID NO:113), SYGIS (SEQ ID NO:123), SYAMS (SEQ ID NO:131), SYAIS (SEQ ID NO:148), TYTMH (SEQ ID NO:173), GYYWS (SEQ ID NO:30), SYWIG (SEQ ID NO:197), NYGMH (SEQ ID NO:234), SYAIH (SEQ ID NO:241), SSSYYWG (SEQ ID NO:24), or DYYIH (SEQ ID NO:281);

one of VISYDGSNKYYADSVKG (SEQ ID NO:78), RTYYRSKWYSEYAVSVKS (SEQ ID NO:87), WINAGNGNTKYSQKFQG (SEQ ID NO:104), TIGGSGDSTFYADPVKG (SEQ ID NO:114), WISAYNGNTNYAQKLQG (SEQ ID NO:124), AISGSGGSTYYADSVKG (SEQ ID NO:132), GIIPIFGTANYAQKFQG (SEQ ID NO:149), GINWNGGSTGYADSVKG (SEQ ID NO:164), WITPGNGNTHYSQNFQG (SEQ ID NO:174), EINHSGSTNYNPSLKS (SEQ ID NO:31), IIYPGDSDTRYSPSFQG (SEQ ID NO:198), AISSNGGSTYYADSVKG (SEQ ID NO:206), VISYDESNKYYADSVKG (SEQ ID NO:220), FISYDGTNKYYADSVKG (SEQ ID NO:235), SIYYSGSTYYNPSLKS (SEQ ID NO:25), VIWYDGSNKYYADSVKG (SEQ ID NO:264), SISSSSSYIYYADSVKG (SEQ ID NO:273), or WVSAYNGDTNYAQKFQG (SEQ ID NO:282);

HC-CDR3: one of DLFAVVGYYYYYGMDV (SEQ ID NO:79), GSIFDV (SEQ ID NO:88), SRGYYGMDV (SEQ ID NO:97), GGYLVGY (SEQ ID NO:105), AYGSGGHYFFAY (SEQ ID NO:115), DWGSSWSDY (SEQ ID NO:125), TYYDFWSGRVGAFDI (SEQ ID NO:133), DRGYYGMDV (SEQ ID NO:141), GRGSGYPDTWFWFDP (SEQ ID NO:150), SYGSGSYRSHAFDI (SEQ ID NO:156), GLVPAASMDV (SEQ ID NO:165), SRVGALDY (SEQ ID NO:175), SRGYSGYDN (SEQ ID NO:181), GLPYYYFDY (SEQ ID NO:189), LGYGVPLPEYFDL (SEQ ID NO:199), EPSGSWSYLYYYYYGMDV (SEQ ID NO:221), HYGDYYYYYGMDV (SEQ ID NO:236), VYGYGLHYYGMDV (SEQ ID NO:242), SYDSSGYYYFDY (SEQ ID NO:250), YAPDSSGYLVAFDI (SEQ ID NO:26), MTTEDY (SEQ ID NO:265), DGSAWSRPY (SEQ ID NO:274), EIASYSGSYYDY (SEQ ID NO:20), or GADWNSDY (SEQ ID NO:290).

In some examples an antibody, antigen binding fragment or polypeptide of the present disclosure comprises any 6 of the CDR sequences described herein. In some examples an antibody, antigen-binding fragment or polypeptide comprises any 3 light chain (‘LC’) CDR sequences described herein, and/or any 3 heavy chain (‘HC’) CDR sequences described herein.

In some examples the antibody, antigen binding fragment, or polypeptide further comprises variable region light chain framework sequences between the CDRs according to the formula: LCFR1-CDR1-LCFR2-CDR2-LCFR3-CDR3-LCFR4. The framework sequences may be derived from human consensus framework sequences.

In some examples the antibody, antigen binding fragment, or polypeptide further comprises variable region heavy chain framework sequences between the CDRs according to the formula: HCFR1-CDR1-HCFR2-CDR2-HCFR3-CDR3-HCFR4. The framework sequences may be derived from human consensus framework sequences.

In some examples, the antibody, antibody binding fragment, or polypeptide, may further comprise a human constant region. For example selected from one of IgG1, IgG2, IgG3 and IgG4.

In some examples, the antibody, antibody binding fragment, or polypeptide, may further comprise a murine constant region. For example, selected from one of IgG1, IgG2A, IgG2B and IgG3.

In another example of the present disclosure, an antibody, antigen binding fragment, or polypeptide conjugated to a drug moiety or a detectable moiety is provided. The drug moiety may be an anti-cancer drug moiety.

In another example of the present disclosure a composition is provided. The composition may be, for example, a pharmaceutical composition or medicament. The composition may comprise an antibody, antigen binding fragment, or polypeptide as described herein. The composition may comprise an antibody, antigen binding fragment, or polypeptide as described herein and at least one pharmaceutically-acceptable carrier, excipient, adjuvant or diluent. The composition may comprise an antibody, antigen binding fragment, or polypeptide as described herein and at least one anti-cancer agent, optionally with at least one pharmaceutically-acceptable carrier, excipient, adjuvant or diluent.

In another example of the present disclosure, an *in vitro* complex is provided comprising an antibody, or antigen binding fragment, or polypeptide as described herein bound to HER2. The *in vitro* complex may be isolated.

In any example of the present disclosure an antibody, antigen binding fragment, or polypeptide as described herein may induce cell death via cell membrane disruption. In any example of the present disclosure an antibody, antigen binding fragment, or polypeptide as described herein may induce cell death by apoptosis. The apoptotic process may proceed through the caspase 3/7 pathway, and optionally involve PARP cleavage. The antibody, antigen binding fragment, or polypeptide as described herein may induce the activation of caspase 3/7 and trigger PARP cleavage. Cell death caused by cell membrane disruption or apoptosis may be induced by an antibody, antigen binding fragment, or polypeptide as described herein binding to HER2.

In another example of the present disclosure a nucleic acid, optionally isolated, encoding an antibody, antigen binding fragment, or polypeptide as described herein is provided. The nucleic acid may comprise a sequence of one or more of SEQ ID NOs 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, or 69 or a coding sequence which is degenerate as a result of the genetic code, or may have a nucleotide sequence having at least 70% identity thereto, optionally one of 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%. The nucleic acid may comprise a sequence of one or more of SEQ ID NOs 70, 71, 80, 81, 89, 90, 98, 99, 106, 107, 116, 117, 126, 127, 134, 135, 142, 143, 151, 152, 157, 158, 166, 167, 176,

177, 182, 183, 190, 191, 200, 201, 207, 208, 213, 214, 222, 223, 229, 230, 237, 238, 243, 244, 251, 252, 257, 258, 266, 267, 275, 276, 283, 284, 291, or 292, or a coding sequence which is degenerate as a result of the genetic code, or may have a nucleotide sequence having at least 70% identity thereto, optionally one of 75%, 80%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or 100%. A coding sequence which is degenerate as a result of the genetic code refers to a coding sequence which encodes an equivalent polypeptide sequence via redundancy of the genetic code.

In one example of the present disclosure there is provided a vector comprising a nucleic acid described herein. In another example of the present disclosure, there is provided a cell comprising the vector. For example, the cell may be eukaryotic, or mammalian, e.g. Chinese Hamster Ovary (CHO), human or non-human, or may be a prokaryotic cell, e.g. *E. coli.*

In one example of the present disclosure a method for making an antibody, or antigen binding fragment or polypeptide as described herein is provided, the method comprising culturing a cell as described herein under conditions suitable for the expression of an antibody, or antigen binding fragment or polypeptide from a nucleic acid or vector described herein.

In another example of the present disclosure an antibody, antigen binding fragment, polypeptide, conjugate, nucleic acid, vector, cell or composition as described herein is provided for use in therapy, or in a method of medical treatment. An antibody, antigen binding fragment, polypeptide, conjugate, nucleic acid, vector, cell or composition as described herein may be used in a method of medical treatment or prophylaxis.

In another example of the present disclosure an antibody, antigen binding fragment, polypeptide, conjugate, nucleic acid, vector, cell or composition as described herein is provided for use in the treatment of cancer, e.g. is provided for use in a method of treating or preventing cancer. In some examples the cancer is a HER2-positive (HER2+) cancer. In some examples the cancer comprises a HER2-positive tumour cell. In some examples the cancer comprises a HER2-positive tumour. In some examples the treatment comprises administering the antibody, antigen binding fragment, polypeptide or composition in combination with a therapeutic agent. In some examples the therapeutic agent is an anti-cancer agent. In some examples the therapeutic agent is an anti-HER2 antibody. In some examples the therapeutic agent may be trastuzumab or pertuzumab.

In another example of the present disclosure, the use of an antibody, antigen binding fragment, polypeptide or composition as described herein in the manufacture of a medicament for use in the treatment of cancer is provided. In some examples the cancer is a HER2-positive (HER2+) cancer. In some examples the cancer comprises a HER2-positive tumour cell. In some examples the cancer comprises a HER2-positive tumour.

In another example of the present disclosure a method of treating cancer is provided, the method comprising administering an antibody, antigen binding fragment, polypeptide or composition as described

herein to a patient suffering from cancer. In some examples the cancer is a HER2-positive (HER2+) cancer. In some examples the cancer comprises a HER2-positive tumour cell. In some examples the cancer comprises a HER2-positive tumour. In some examples the method comprises administering the antibody, antigen binding fragment, polypeptide or composition in combination with a therapeutic agent. In some examples the therapeutic agent is an anti-cancer agent. In some examples the therapeutic agent is an agent which targets HER2. In some examples the therapeutic agent is an anti-HER2 antibody. In some examples the therapeutic agent may be trastuzumab or pertuzumab.

In another example of the present disclosure a method of inhibiting growth of a tumour cell is provided, comprising administering to the cell an antibody, antigen binding fragment, polypeptide, or composition as described herein. The method may be *in vitro* or *in vivo*. In some examples a method of inhibiting growth of a tumour cell in a subject is provided, the method comprising administering to the subject a therapeutically effective amount of an antibody, antigen binding fragment, polypeptide, or composition as described herein. Also provided is an antibody, antigen binding fragment, polypeptide, or composition as described herein for use in a method of inhibiting growth of a tumour cell in a subject. In some examples the method of inhibiting growth of a tumour cell comprises administering the antibody, antigen binding fragment, polypeptide or composition in combination with a therapeutic agent as described herein.

Also provided is a method of killing a tumour cell, the method comprising administering to the cell an antibody, antigen binding fragment, polypeptide, or composition as described herein. The method may be performed *in vitro* or *in vivo*. In some examples a method of killing a tumour cell in a subject is provided, the method comprising administering to the subject a therapeutically effective amount of an antibody, antigen binding fragment, polypeptide, or composition as described herein. In some examples the method of killing a tumour cell comprises administering the antibody, antigen binding fragment, polypeptide or composition in combination with a therapeutic agent as described herein. Killing of a tumour cell may, for example, be as a result of membrane disruption, cell lysis, induction of apoptosis, antibody dependent cell-mediated cytotoxicity (ADCC), complement dependent cytotoxicity (CDC), or through the action of a drug conjugated to the antibody, antigen binding fragment or polypeptide.
Also provided is an antibody, antigen binding fragment, polypeptide, or composition as described herein for use in a method of killing a tumour cell, e.g. in a subject, as described herein.

In another example of the present disclosure a method is provided comprising contacting a sample containing, or suspected to contain, HER2 with an antibody, antigen binding fragment, or polypeptide as described herein and detecting the formation of a complex of antibody, antigen binding fragment, or polypeptide, and HER2.

In another example of the present disclosure a method of diagnosing a disease or condition in a subject is provided, the method comprising contacting, *in vitro*, a sample from the subject with an antibody, antigen binding fragment, or polypeptide as described herein and detecting the formation of a complex of antibody, antigen binding fragment, or polypeptide, and HER2.

In another example of the present disclosure a method of selecting or stratifying a subject for treatment with HER2 targeted agents is provided, the method comprising contacting, *in vitro*, a sample from the subject with an antibody, antigen binding fragment, or polypeptide as described herein and detecting the formation of a complex of antibody, or antigen binding fragment, and HER2.

In a further example of the present disclosure a use of an antibody, antigen binding fragment, or polypeptide as described herein for the detection of HER2 *in vitro* is provided. In another example of the present disclosure a use of an antibody, antigen binding fragment, or polypeptide as described herein as an *in vitro* diagnostic agent is provided.

In methods of the present disclosure the antibody, antigen binding fragment or polypeptide may be provided as a composition as described herein.

The present disclosure also provides a chimeric antigen receptor (CAR) comprising an antibody, antigen binding fragment or polypeptide according to the present disclosure.

The present disclosure also provides an *in vitro* complex, optionally isolated, comprising a CAR according to the present disclosure bound to HER2.

The present disclosure also provides a nucleic acid, optionally isolated, encoding a CAR according to the present disclosure.

The present disclosure also provides an expression vector comprising a nucleic acid according to the present disclosure.

The present disclosure also provides a cell comprising a CAR, a nucleic acid, or an expression vector according to the present disclosure.

The present disclosure also provides a composition comprising a CAR, a nucleic acid, an expression vector or a cell according to the present disclosure.

The present disclosure also provides a CAR, a nucleic acid, an expression vector, a cell or a composition according to the present disclosure for use in a method of medical treatment or prophylaxis. The present disclosure also provides a CAR, a nucleic acid, an expression vector, a cell or a composition according to the present disclosure for use in a method of treating or preventing cancer.

In any example the antibody may be clone P1A3, P1C5, P1E4, or P1F1 as described herein. In any example the antibody may be clone PFA4, PFB4, PFB5, PFC3, PFD4, PFE1, PFF5, or PFG3 as described

herein. In any example the antibody may be clone PFA1, PFA2, PFA5, PFB1, PFB2, PFB3, PFC2, PFC4, PFD1, PFD2, PFD3, PFE2, PFE5, PFF2, PFF3, PFF4, PFG1, PFG2, PFG4, or PFG5 as described herein.

**Description**

Antibodies and antigen-binding molecules

The present invention provides antibodies and antigen-binding molecules capable of binding to HER2.

Antibodies according to the present invention preferably bind to HER2 (the antigen), preferably human or murine HER2, optionally with a $K_D$ in the range 4 to 23 nM.

Antibodies according to the present invention may be provided in isolated form. The antibodies may be provided in substantially purified form.

Antibodies according to the present invention may exhibit least one of the following properties:

a) Binds to human HER2 with a $K_D$ of 1 µM or less, preferably one of ≤100 nM, ≤75 nM, ≤50 nM, ≤40 nM, ≤30 nM, ≤20 nM, ≤15 nM , ≤12.5 nM, ≤10 nM, ≤9 nM, ≤8 nM, ≤7 nM, ≤6 nM, ≤5 nM, ≤4 nM ≤3 nM, ≤2 nM, ≤1 nM, ≤500 pM (e.g. as determined by SPR);

b) Binds to HER2-overexpressing or HER2-expressing cells, optionally does not bind to HER2-negative cells;

c) Binds to an epitope of HER2, optionally human HER2, which is different to the epitope of HER2 to which trastuzumab (Herceptin ®) binds;

d) Induces cell death of HER2-expressing cells, optionally by disruption of cell membranes;

**Claims:**

1. An antibody or antigen binding fragment which is capable of binding to HER2, optionally isolated, wherein the antibody or antigen binding fragment comprises:

(i) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTGHYAS (SEQ ID NO:15)

LC-CDR2: NTNTRSS (SEQ ID NO:16)

LC-CDR3: VLYVGDGIWV (SEQ ID NO:17); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYYIH (SEQ ID NO:18)

HC-CDR2: IINPGNGDTNYAQRFQG (SEQ ID NO:19)

HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20);

or

(ii) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTGYYPS (SEQ ID NO:21)

LC-CDR2: STNSRSS (SEQ ID NO:22)

LC-CDR3: VLYMGSGISV (SEQ ID NO:23); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SSSYYWG (SEQ ID NO:24)

HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25)

HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26);

or

(iii) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)

LC-CDR2: TTNIRSS (SEQ ID NO:28)

LC-CDR3: MLYMGSGIWV (SEQ ID NO:29); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYYWS (SEQ ID NO:30)

HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31)

HC-CDR3: MGINSGGYLYGMDV (SEQ ID NO:32);

or

(iv) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTSYYPS (SEQ ID NO:27)

LC-CDR2: STNTRSS (SEQ ID NO:33)

LC-CDR3: VLYMGSGIWV (SEQ ID NO:34); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SSNWWS (SEQ ID NO:35)

HC-CDR2: EIYHSGSTNYNPSLKS (SEQ ID NO:36)

HC-CDR3: MGANSGGYLYGMDV (SEQ ID NO:37);

or

(v) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGFNYLD (SEQ ID NO:74)

LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MQGLQTPYT (SEQ ID NO:76); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYGMH (SEQ ID NO:77)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3 DLFAVVGYYYYYGMDV (SEQ ID NO:79);

or

(vi) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSDGNKYLD (SEQ ID NO:84)

LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MLGTHWPPMYI (SEQ ID NO:85); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SAAAAWN (SEQ ID NO:86)

HC-CDR2: RTYYRSKWYSEYAVSVKS (SEQ ID NO:87)

HC-CDR3: GSIFDV (SEQ ID NO:88);

or

(vii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)

LC-CDR2: KVSNRDS (SEQ ID NO:94)

LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SRGYYGMDV (SEQ ID NO:97);

or

(viii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MQALQTPWT (SEQ ID NO:103); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: WINAGNGNTKYSQKFQG (SEQ ID NO:104)

HC-CDR3: GGYLVGY (SEQ ID NO:105);

or

(ix) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGNTYLD (SEQ ID NO:110)

LC-CDR2: SGSNRAS (SEQ ID NO:111)

LC-CDR3: MQGTHWPPT (SEQ ID NO:112); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SFAMN (SEQ ID NO:113)

HC-CDR2: TIGGSGDSTFYADPVKG (SEQ ID NO:114)

HC-CDR3: AYGSGGHYFFAY (SEQ ID NO:115);

or

(x) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASQSVRNNLA (SEQ ID NO:120)

LC-CDR2: YASTRAT (SEQ ID NO:121)

LC-CDR3: QHYGSSRT (SEQ ID NO:122); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYGIS (SEQ ID NO:123)

HC-CDR2: WISAYNGNTNYAQKLQG (SEQ ID NO:124)

HC-CDR3: DWGSSWSDY (SEQ ID NO:125);

or

(xi) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MAGLQTPRLT (SEQ ID NO:130); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMS (SEQ ID NO:131)

HC-CDR2: AISGSGGSTYYADSVKG (SEQ ID NO:132)

HC-CDR3: TYYDFWSGRVGAFDI (SEQ ID NO:133);

or

(xii) a light chain variable region incorporating the following CDRs:

LC-CDR1: GSTTGAVTSGHYPS (SEQ ID NO:138)

LC-CDR2: STSNKHS (SEQ ID NO:139)

LC-CDR3: LLYYGGARV (SEQ ID NO:140); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYGMH (SEQ ID NO:77)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: DRGYYGMDV (SEQ ID NO:141);

or

(xiii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSHRAS (SEQ ID NO:146)

LC-CDR3: MQALQTPLT (SEQ ID NO:147); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAIS (SEQ ID NO:148)

HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)

HC-CDR3: GRGSGYPDTWFWFDP (SEQ ID NO:150);

or

(xiv) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSNRAP (SEQ ID NO:155)

LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156);

or

(xv) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161)

LC-CDR2: GASSRAT (SEQ ID NO:162)

LC-CDR3: QQYGSSPRT (SEQ ID NO:163); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMS (SEQ ID NO:131)

HC-CDR2: GINWNGGSTGYADSVKG (SEQ ID NO:164)

HC-CDR3: GLVPAASMDV (SEQ ID NO:165);

or

(xvi) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLQHSNGYQYLD (SEQ ID NO:170)

LC-CDR2: LGSFRAS (SEQ ID NO:171)

LC-CDR3: MHALSTPPWT (SEQ ID NO:172); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: TYTMH (SEQ ID NO:173)

HC-CDR2: WITPGNGNTHYSQNFQG (SEQ ID NO:174)

HC-CDR3: SRVGALDY (SEQ ID NO:175);

or

(xvii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)

LC-CDR2: KVSNRDS (SEQ ID NO:94)

LC-CDR3: MQGTHWPGT (SEQ ID NO:180); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYGMH (SEQ ID NO:77)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SRGYSGYDN (SEQ ID NO:181);

or

(xviii) a light chain variable region incorporating the following CDRs:

LC-CDR1: TGRSANIGGFDVQ (SEQ ID NO:186)

LC-CDR2: DNSNRPS (SEQ ID NO:187)

LC-CDR3: GTWDSYLNIWV (SEQ ID NO:188); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYYWS (SEQ ID NO:30)

HC-CDR2: EINHSGSTNYNPSLKS (SEQ ID NO:31)

HC-CDR3: GLPYYYFDY (SEQ ID NO:189);

or

(xix) a light chain variable region incorporating the following CDRs:

LC-CDR1: ALTSGSVSTSYYPS (SEQ ID NO:194)

LC-CDR2: STNLRSS (SEQ ID NO:195)

LC-CDR3: ELYMGSGISV (SEQ ID NO:196); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYWIG (SEQ ID NO:197)

HC-CDR2: IIYPGDSDTRYSPSFQG (SEQ ID NO:198)

HC-CDR3: LGYGVPLPEYFDL (SEQ ID NO:199);

or

(xx) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLVYSDGNTYLN (SEQ ID NO:93)

LC-CDR2: KVSDRDS (SEQ ID NO:204)

LC-CDR3: MQGTHWPQT (SEQ ID NO:205); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206)

HC-CDR3: SRGYYGMDV (SEQ ID NO:97);

or

(xxi) a light chain variable region incorporating the following CDRs:

LC-CDR1: TSSQSLVYSDGNTYLN (SEQ ID NO:211)

LC-CDR2: KVSKRDS (SEQ ID NO:212)

LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SRGYYGMDV (SEQ ID NO:97);

or

(xxii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLRSDGYNFVD (SEQ ID NO:217)

LC-CDR2: LGSDRAS (SEQ ID NO:218)

LC-CDR3: MQALQTPRT (SEQ ID NO:219); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDESNKYYADSVKG (SEQ ID NO:220)

HC-CDR3: EPSGSWSYLYYYYYGMDV (SEQ ID NO:221);

or

(xxiii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASQGISSWLA (SEQ ID NO:226)

LC-CDR2: AASSLQS (SEQ ID NO:227)

LC-CDR3: QQANSFPPT (SEQ ID NO:228); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SRGYYGMDV (SEQ ID NO:97);

or

(xxiv) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASQSVSSSYLA (SEQ ID NO:161)

LC-CDR2: GASSRAT (SEQ ID NO:162)

LC-CDR3: QQYGSSSA (SEQ ID NO:233); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: NYGMH (SEQ ID NO:234)

HC-CDR2: FISYDGTNKYYADSVKG (SEQ ID NO:235)

HC-CDR3: HYGDYYYYYGMDV (SEQ ID NO:236);

or

(xxv) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSNRAS (SEQ ID NO:75)

LC-CDR3: MQGTHWPGT (SEQ ID NO:180); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAIH (SEQ ID NO:241)

HC-CDR2: AISSNGGSTYYADSVKG (SEQ ID NO:206)

HC-CDR3: VYGYGLHYYGMDV (SEQ ID NO:242);

or

(xxvi) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASRSVGKYLA (SEQ ID NO:247)

LC-CDR2: DASTRAS (SEQ ID NO:248)

LC-CDR3: QHYGTSPPFI (SEQ ID NO:249); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAIS (SEQ ID NO:148)

HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)

HC-CDR3: SYDSSGYYYFDY (SEQ ID NO:250);

or

(xxvii) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLSSGSVSTTYYPS (SEQ ID NO:255)

LC-CDR2: STNTRSS (SEQ ID NO:33)

LC-CDR3: VLYMGNGISV (SEQ ID NO:256); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SSSYYWG (SEQ ID NO:24)

HC-CDR2: SIYYSGSTYYNPSLKS (SEQ ID NO:25)

HC-CDR3: YAPDSSGYLVAFDI (SEQ ID NO:26);

or

(xxviii) a light chain variable region incorporating the following CDRs:

LC-CDR1: TLRSGINVGTYRIY (SEQ ID NO:261)

LC-CDR2: YKSDSDKQQGS (SEQ ID NO:262)

LC-CDR3: MIWHSSAWV (SEQ ID NO:263); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYGMH (SEQ ID NO:77)

HC-CDR2: VIWYDGSNKYYADSVKG (SEQ ID NO:264)

HC-CDR3: MTTEDY (SEQ ID NO:265); or

(xxix) a light chain variable region incorporating the following CDRs:

LC-CDR1: RASQSVSSYLA (SEQ ID NO:270)

LC-CDR2: DASNRAT (SEQ ID NO:271)

LC-CDR3: QQRSNWPLT (SEQ ID NO:272); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMS (SEQ ID NO:131)

HC-CDR2: SISSSSSYIYYADSVKG (SEQ ID NO:273)

HC-CDR3: DGSAWSRPY (SEQ ID NO:274); or

(xxx) a light chain variable region incorporating the following CDRs:

LC-CDR1: GLTSGAVSSSYYPS (SEQ ID NO:279)

LC-CDR2: NTDIRFS (SEQ ID NO:280)

LC-CDR3: VLYMGSGISV (SEQ ID NO:23); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: DYYIH (SEQ ID NO:281)

HC-CDR2: WVSAYNGDTNYAQKFQG (SEQ ID NO:282)

HC-CDR3: EIASYSGSYYDY (SEQ ID NO:20); or

(xxxi) a light chain variable region incorporating the following CDRs:

LC-CDR1: TGNNNNVGFAGAA (SEQ ID NO:287)

LC-CDR2: RNNDRPS (SEQ ID NO:288)

LC-CDR3: SAWDSSLKVQV (SEQ ID NO:289); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAIS (SEQ ID NO:148)

HC-CDR2: GIIPIFGTANYAQKFQG (SEQ ID NO:149)

HC-CDR3: GADWNSDY (SEQ ID NO:290); or

(xxxii) a light chain variable region incorporating the following CDRs:

LC-CDR1: RSSQSLLHSNGYNYLD (SEQ ID NO:102)

LC-CDR2: LGSNRAP (SEQ ID NO:155)

LC-CDR3: MQGTHWPLT (SEQ ID NO:95); and

a heavy chain variable region incorporating the following CDRs:

HC-CDR1: SYAMH (SEQ ID NO:96)

HC-CDR2: VISYDGSNKYYADSVKG (SEQ ID NO:78)

HC-CDR3: SYGSGSYRSHAFDI (SEQ ID NO:156).

2. The antibody or antigen binding fragment according to claim 1, wherein the antibody or antigen binding fragment comprises:

(i) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:1; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:5;

or

(ii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:2; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:6;

or

(iii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:3; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:7;

or

(iv) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:4; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:8;

or

(v) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:72; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:73;

or

(vi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:82; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:83;

or

(vii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:91; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:92;

or

(viii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:100; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:101;

or

(ix) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:108; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:109;

or

(x) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:118; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:119;

or

(xi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:128; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:129;

or

(xii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:136; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:137;

or

(xiii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:144; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:145;

or

(xiv) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:153; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:154;

or

(xv) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:159; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:160;

or

(xvi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:168; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:169;

or

(xvii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:178; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:179;

or

(xviii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:184; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:185;

or

(xix) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:192; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:193;

or

(xx) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:202; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:203;

or

(xxi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:209; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:210;

or

(xxii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:215; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:216;

or

(xxiii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:224; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:225;

or

(xxiv) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:231; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:232;

or

(xxv) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:239; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:240;

or

(xxvi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:245; and
a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:246;

or

(xxvii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:253; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:254;

or

(xxviii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:259; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:260;

or

(xxix) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:268; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:269;

or

(xxx) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:277; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:278;

or

(xxxi) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:285; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:286;

or

(xxxii) a light chain variable region having at least 85% sequence identity to the light chain variable region sequence of SEQ ID NO:293; and

a heavy chain variable region having at least 85% sequence identity to the heavy chain variable region sequence of SEQ ID NO:294.

3. The antibody or antigen binding fragment according to claim 1 or claim 2, wherein the antibody or antigen binding fragment binds specifically to human, rhesus macaque or murine HER2.

4. The antibody or antigen binding fragment according to any one of claim 1 to 3, conjugated to a drug moiety or a detectable moiety.

5. The antibody or antigen binding fragment according to claim 4, wherein the drug moiety comprises an anti-cancer drug moiety.

6. A chimeric antigen receptor (CAR) comprising an antibody or antigen binding fragment according to any one of claims 1 to 3.

7. An *in vitro* complex, optionally isolated, comprising an antibody or antigen binding fragment according to any one of claims 1 to 5, or a CAR according to claim 6, bound to HER2.

8. A nucleic acid, optionally isolated, encoding an antibody or antigen binding fragment according to any one of claims 1 to 5, or a CAR according to claim 6.

9. A vector comprising the nucleic acid according to claim 8.

10. A cell comprising the nucleic acid according to claim 8, or the vector according to claim 9.

11. A method for making an antibody or antigen binding fragment according to any one of claims 1 to 5, or a CAR according to claim 6, comprising culturing a cell according to claim 10 under conditions suitable for the expression of the antibody, antigen binding fragment or CAR from the nucleic acid or vector.

12. A composition comprising an antibody or antigen binding fragment according to any one of claims 1 to 5, or a cell according to claim 10, and at least one pharmaceutically-acceptable carrier.

13. An antibody or antigen binding fragment according to any of one of claims 1 to 5, a cell according to claim 10, or a composition according to claim 12, for use in therapy, or in a method of medical treatment.

14. Use of an antibody or antigen binding fragment according to any one of claims 1 to 5, a cell according to claim 10 or a composition according to claim 12, in the manufacture of a medicament for use in the treatment of cancer.

15. The use according to claim 14, wherein the cancer is a HER2-positive cancer.

16. The use according to claim 15, wherein the cancer comprises a HER2-positive tumour cell.

17. A method comprising contacting, *in vitro*, a sample containing, or suspected to contain, HER2 with an antibody or antigen binding fragment according to any one of claims 1 to 5, and detecting the formation of a complex comprising the antibody or antigen binding fragment and HER2.

18. A method of diagnosing a HER2-positive cancer in a subject, the method comprising contacting, *in vitro*, a sample from the subject with an antibody or antigen binding fragment according to any one of claims 1 to 5, and detecting the formation of a complex comprising the antibody or antigen binding fragment and HER2.