Claims

1. Fc binding polypeptide comprising a Sequence A that consists of an amino acid sequence selected from i), ii) and iii), wherein i), ii) and iii) are defined as follows:

i) $EX_{25}QX_{27}X_{28}X_{29}X_{30}IX_{32}X_{33}$ $LX_{35}X_{36}X_{37}PSX_{40}SX_{42}X_{43}$ $X_{44}LX_{46}EAX_{49}X_{50}X_{51}NX_{53}X_{54}$ (SEQ ID NO:65)
wherein, independently from each other,

X_{25} is selected from E and D;
X_{27} is selected from R and H;
X_{28} is selected from N, A, S, H and W;
X_{29} is selected from A, G and K;
X_{30} is selected from F and A;
X_{32} is selected from Q and H;
X_{35} is selected from K, R and H;
X_{36} is selected from D and H;
X_{37} is selected from D and E;
X_{42} is selected from A, K, L, R and T;
X_{43} is selected from N, E, A, K and S;
X_{44} is selected from L, I and V;
X_{46} is selected from A, G and K;
X_{49} is selected from K, Q and R;
X_{50} is selected from K and R;
X_{53} is selected from D, E and K; and
X_{54} is selected from A and S;

ii) an amino acid sequence which has at least 83 % identity to a sequence defined by i);

iii) an amino acid sequence which has at least 70 % identity to any sequence selected from the group consisting of: residues 24-54 in SEQ ID NO:58, residues 24-54 in SEQ ID NO:59, residues 24-54 in SEQ ID NO:60, residues 24-54 in SEQ ID NO:61, residues 24-54 in SEQ ID NO:62, residues 27-57 in SEQ ID NO:63 and residues 22-52 in SEQ ID NO:64,

wherein additionally, in each of i), ii) and iii) independently from each other,
X_{33} is selected from T, S, G, Q, A, E, H, R, P, D and N;
X_{40} is selected from E, G, R, D, K, N, H and S; and
X_{51} is selected from L, V, S, I, R and G;
with the proviso that when X_{51} is L then $X_{33}X_{40}$ is selected from AD, HK, EG, ER, GR, AK, AR, PK, and RR and when X_{51} is G then $X_{33}X_{40}$ is TK.

2. Fc binding polypeptide according to claim 1, wherein said Fc binding polypeptide has a lower binding affinity for the VH3 region of trastuzumab, than SEQ ID NO:59.

3. Fc binding polypeptide according to claim 1 or 2, wherein X_{33} is selected from T, S, G, Q, A, E and H; and/or X_{40} is selected from E, G, R, D, and K; and/or X_{51} is selected from L, V, S, I and R.

4. Fc binding polypeptide according to any one of claim 1-3, wherein $X_{33}X_{40}X_{51}$ are selected from the group consisting of ADL, AGR, AKL, ARI, ARL, DKI, DNS, DRV, EGL, ERL, GDR, GDV, GER, GGI, GGS, GNI, GRI, GRL, GRR, HKI, HKL, HRI, HSR, HSV, NHS, PDR, PHR, PHS, PKL, PKS, PSI, QDI, QDV, QNS, QRI, QRV, RRI, RRL, SGV, SRR, SRS, SRV, TER, TKG, TKI, TRR and TSR, such as the group consisting of ADL, AGR, AKL, ARI, ARL, DKI, DNS, DRV, EGL, ERL, GDR, GDV, GER, GGI, GNI, GRI, GRL, GRR, HKI, HKL, HRI, HSR, HSV, NHS, PDR, PHR, PHS, PKL, PKS, PSI, QDI, QDV, QNS, QRI, QRV, RRI, RRL, SGV, SRR, SRS, SRV, TER, TKI, TRR and TSR.

5. Fc binding polypeptide according to any one of claims 1-4, wherein $X_{33}X_{40}X_{51}$ are selected from the group consisting of GGS, GGI, SRV, GRL, QRI, ARI, SGV, TER, GER, ADL, AGR, EGL, HKL, GDV and QDI, such as the group consisting of ARI, SGV, AGR and EGL.

6. Fc binding polypeptide according to any one of claims 1-5, wherein $X_{33}X_{40}X_{51}$ is SGV.

7. Fc binding polypeptide according to any one of claims 1-6, further comprising a Sequence B arranged N-terminally of said sequence A, which Sequence B consists of an amino acid sequence selected from iv) and v), and wherein iv) and v) are defined as follows:

iv) $X_8X_9X_{10}X_{11}AFYX_{15}IX_{17}X_{18}X_{19}PX_{21}LX_{23}$ (SEQ ID NO:66)

wherein, independently from each other,

X_8 is selected from E, D and A;
X_9 is selected from Q, A, L, W, E, V, K, T and H;
X_{10} is selected from Q and H;
X_{11} is selected from N, A, S, E, K, H, Q, Y, T, F, L, W, I, M, V and R;
X_{15} is selected from E, H and Q;
X_{17} is selected from L and H;
X_{18} is selected from H, N and K;
X_{19} is selected from L and M;
X_{21} is selected from N, Y and S;
X_{23} is selected from T and N;

v) an amino acid sequence which has at least 75 % identity to a sequence defined by iv).

8. Fc binding polypeptide according to any preceding claim, comprising a binding module Sequence C,
which Sequence C consists of Sequence A according to any one of claims 1-6 and Sequence B according to claim 7, in the following order from the N-terminus to the C-terminus

[Sequence B]-[Sequence A]

or any amino acid sequence which has at least 70 % identity to any sequence selected from the group consisting of: residues 8-54 in SEQ ID NO:58, residues 8-54 in SEQ ID NO:59, residues 8-54 in SEQ ID NO:60, residues 8-54 in SEQ ID NO:61, residues 8-54

in SEQ ID NO:62, residues 11-57 in SEQ ID NO:63 and residues 6-52 in SEQ ID NO:64.

9. Fc binding polypeptide according to any one of claims 1-8, comprising a sequence selected from the group consisting of:

x) VDAKFDKEAQEAFYEILHLPNLT-[Sequence A]-QAPK (SEQ ID NO:172)

wherein [Sequence A] is as defined in any one of claims 1-7;

xi) an amino acid sequence which has at least 86 % identity to the sequence defined in x);

xvi) VDNKFNKEQQNAFYEILHLPNLN-[Sequence A]-QAPK (SEQ ID NO:173)

wherein [Sequence A] is as defined in any one of claims 1-7; and

xvii) an amino acid sequence which has at least 86 % identity to the sequence defined in xvi).

10. Fc binding polypeptide according to claim 9, wherein sequence x) or xvi) corresponds to a sequence selected from the group consisting of SEQ ID NO:1-57, 208-264, 269-305 such as the group consisting of SEQ ID NO:1-16 and 208-223, such as corresponds to SEQ ID NO:7 or 214.

11. Fc binding polypeptide according to claim 9 or 10 wherein sequence x) corresponds to a sequence selected from the group consisting of SEQ ID NO:1-57, such as the group consisting of SEQ ID NO:1-16, such as corresponds to SEQ ID NO:7.

12. Fc binding polypeptide multimer, wherein each monomer of the multimer comprises a Fc binding polypeptide which is independently selected from any Fc binding polypeptide as defined in any one of claims 1-11 and wherein the mutlimer preferably is a hexamer.

13. Fc binding polypeptide according to any one of claims 1-11 or Fc binding polypeptide multimer according to claim 12, which is capable of binding to Fc such that the K_D value of the interaction is at most 1 x 10^{-7} M, such as at most 1 x 10^{-8} M, such as at most 1 x 10^{-9} M, such as at most 1 x 10^{-10} M, such as at most 1 x 10^{-11} M.

14. Fc binding polypeptide according to any one of claims 1-11 and 13 or Fc binding polypeptide multimer according to claim 12 or 13, which is not capable of binding to said VH3 with a K_D value of the interaction of less than 1 x 10^{-4} M, such as less than 1 x 10^{-3} M.

15. A separation matrix comprising an Fc binding polypeptide according to any one of claims 1-11 or 13-14 or an Fc binding polypeptide multimer according to any one of claims 12-14 being coupled to a solid support, which solid support preferably is in fibrous, beaded or particle form.

16. A method of isolating an immunoglobulin comprising
a) contacting a liquid sample comprising said immunoglobulin with a separation matrix according claim 15.