

Claims

1. A polypeptide binding to fibroblast growth factor receptor 3 isoforms 3b and 3c (FGFR3b and FGFR3c), wherein the polypeptide comprises an amino acid sequence selected from the group consisting of:
 - (a) GVTLFVALYDYEYVGPTPMLSFHKGEKFQIL(X¹)(X²)(X³)(X⁴)GPYWEA
RSL(X⁵)TGETG(X⁶)IPSNYVAPVDSIQ (SEQ ID NO: 1);
wherein amino acid positions (X¹) to (X⁶) may be any amino acid sequence; and
 - (b) an amino acid sequence which is at least 95% identical to the amino acid sequence of (a), wherein the identity determination excludes amino acid positions (X¹) to (X⁶) and provided that the amino acid sequence EVYGPTPM (SEQ ID NO: 2) in amino acid positions 12 to 19 of SEQ ID NO: 1 is conserved and the amino acids P and Y in amino acid positions 37 and 38 of SEQ ID NO: 1 are conserved;
 - (c) GVTLFVALYDYEVMSTTALSFKHGEKFQILSQSPHGQYWEARSLTTGETG
(X⁶)IPSNY
VAPVDSIQ (SEQ ID NO: 19),
wherein the amino acid position (X⁶) may be any amino acid; and
 - (d) an amino acid sequence which is at least 95% identical to the amino acid sequence of (c), wherein the identity determination excludes amino acid position (X⁶) and provided that the amino acid sequences EVMSTTA (SEQ ID NO: 20) in amino acid positions 12 to 18 of SEQ ID NO: 19 and SQSPH (SEQ ID NO: 21) in amino acid positions 31 to 35 of SEQ ID NO: 19 are conserved and the amino acids Q and Y in amino acid positions 37 and 38 of SEQ ID NO: 19 are conserved.
2. The polypeptide of claim 1, wherein
 - (X¹) is N, R, or K, and is preferably R or K;
 - (X²) is S, G, K or R, and is preferably G, K or R;
 - (X³) is S or G, and is preferably G;
 - (X⁴) is E, Q, D, S or K, and is preferably Q, D, S or K;

(X⁵) is T or A; and

(X⁶) is Y, W or L, and is preferably L or W.

3. The polypeptide of claim 1 or 2, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of any one of SEQ ID NOs 3 to 8 and 22.
4. The polypeptide of claim 3, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of:
 - SEQ ID NO: 4,
 - SEQ ID NO: 5,
 - SEQ ID NO: 6,
 - SEQ ID NO: 7,
 - SEQ ID NO: 8, and
 - SEQ ID NO: 22.
5. A fusion construct comprising the polypeptide of any one of claims 1 to 4 fused to a further compound.
6. The fusion construct according to claim 5, wherein the further compound is a toxic compound.
7. The fusion construct according to claim 5, wherein the further compound comprises an antibody light chain, an antibody heavy chain, an Fc domain of an antibody, an antibody, or a combination thereof.
8. The fusion construct according to claim 7, wherein the antibody is directed against a target selected from the group consisting of GM-2, CD38, ICAM-1, SLAMF7, CD45, CD40, CD74, IGFR-1, CD20, BAFF, BCMA, CD66, GRP78, CXCR4, EGFR, EPCAM, TROP-2, B7H3 and CEACAM-1.
9. A nucleic acid molecule encoding the polypeptide of any one of claims 1 to 4, or the fusion

construct of claims 5 or 7, or one or more nucleic acid molecules encoding the fusion construct according to claim 7 or 8.

10. A pharmaceutical or diagnostic composition comprising the polypeptide of any one of claims 1 to 4, the fusion construct of any one of claims 5 to 8, the nucleic acid molecule of claim 9, or any combination thereof.
11. The pharmaceutical composition of claim 10 for use in the treatment of cancer or a T-cell mediated disease.
12. The pharmaceutical composition for use according to claim 11, wherein the cancer is selected from breast cancer, cervical cancer, colorectal cancer, endometrial cancer, glioma, head and neck cancer, liver cancer, lung cancer, multiple myeloma, bladder cancer, ovarian cancer, pancreatic cancer, skin cancer, testis cancer and urothelial cancer.
13. The pharmaceutical composition for use according to claim 11, wherein the cancer is selected from multiple myeloma, bladder cancer, cervix cancer, pancreatic cancer, squamous cell lung cancer and colorectal cancer.
14. The pharmaceutical composition for use according to claim 11, wherein the T-cell mediated disease is selected from rheumatoid arthritis (RA), collagen II arthritis, multiple sclerosis (MS), systemic lupus erythematosus (SLE), psoriasis, juvenile onset diabetes, Sjogren's disease, thyroid disease, sarcoidosis, autoimmune uveitis, inflammatory bowel disease (Crohn's and ulcerative colitis), celiac disease and myasthenia gravis.