CLAIMS

1. A recombinant binding protein comprising an ankyrin repeat domain, wherein said ankyrin repeat domain has binding specificity for fibroblast activation protein (FAP), wherein said ankyrin repeat domain binds human FAP in PBS with a dissociation constant (K_D) below 10^{-7}M, and wherein said ankyrin repeat domain comprises an ankyrin repeat module comprising an amino acid sequence selected from the group consisting of

(i) (1) SEQ ID NOs: 48, 52 to 93, 96, 97, 99 to 110, 112, 114 to 131, 133 and 134 and (2) sequences in which up to 5 amino acids in any of SEQ ID NOs: 48, 52 to 93, 96, 97, 99 to 110, 112, 114 to 131, 133 and 134 are exchanged by another amino acid;

(ii) (1) SEQ ID NOs: 51, 113 and 132 and (2) sequences in which up to 4 amino acids in any of SEQ ID NOs: 51, 113 and 132 are exchanged by another amino acid;

(iii) (1) SEQ ID NOs: 49, 95, 98 and 111 and (2) sequences in which up to 3 amino acids in any of SEQ ID NOs: 49, 95, 98 and 111 are exchanged by another amino acid;

(iv) (1) SEQ ID NO: 50 and (2) sequences in which up to 2 amino acids in SEQ ID NO: 50 are exchanged by another amino acid; and

(v) (1) SEQ ID NO: 94 and (2) sequences in which up to 1 amino acid in SEQ ID NO: 94 is exchanged by another amino acid.

2. The binding protein of claim 1, wherein said ankyrin repeat module comprises an amino acid sequence selected from the group consisting of (1) SEQ ID NOs: 48 to 134 and (2) sequences in which up to 1 amino acid in any of SEQ ID NOs: 48 to 134 is exchanged by another amino acid, preferably wherein said ankyrin repeat module comprises an amino acid sequence selected from the group consisting of (1) SEQ ID NOs: 94 to 98, 111 to 113 and 132 to 134 and (2) sequences in which up to 1 amino acid in any of SEQ ID NOs: SEQ ID NOs: 94 to 98, 111 to 113 and 132 to 134 is exchanged by another amino acid.

3. The binding protein of claim 1, wherein said ankyrin repeat module is a first ankyrin repeat module and comprises an amino acid sequence selected from the group consisting of (1) SEQ ID NO: 94 and (2) sequences in which up to 9 amino acids in SEQ ID NO: 94 are exchanged by another amino acid, and wherein said ankyrin repeat domain further comprises a second ankyrin repeat module comprising an amino acid sequence selected from the group consisting of (1) SEQ ID NO: 95 and (2) sequences in which up to 9 amino acids of SEQ ID NO: 95 are exchanged by another amino acid, and wherein said ankyrin repeat domain further comprises a third ankyrin repeat module comprising an amino acid sequence selected from the group consisting of (1) SEQ ID NO: 96 and (2) sequences in which up to 9 amino acids of SEQ ID NO: 96 are exchanged by another amino acid.

4. The binding protein of claim 3, wherein said first ankyrin repeat module is located N-terminally of said second ankyrin repeat module within said ankyrin repeat domain, and wherein said second ankyrin repeat module is located N-terminally of said third ankyrin repeat module within said ankyrin repeat domain.

5. A recombinant binding protein comprising an ankyrin repeat domain, wherein said ankyrin repeat domain has binding specificity for fibroblast activation protein (FAP), wherein said ankyrin repeat domain binds human FAP in PBS with a dissociation constant (K_D) below 10^{-7}M, and wherein said ankyrin repeat domain comprises an amino acid sequence with at least 91% amino acid sequence identity with any one of SEQ ID NOs: 1 to 35 and 144 to 153, wherein G at position 1 and/or S at position 2 of SEQ ID NOs: 1 to 35 and 144 to 153 are optionally missing, and wherein L at the second last position and/or N at the last position of SEQ ID NOs: 1 to 33, 144, 145 and 148 to 150 are optionally exchanged by A.

6. The binding protein of claim 5, wherein said ankyrin repeat domain comprises the amino acid sequence of SEQ ID NO: 18, wherein G at position 1 and/or S at position 2 of said ankyrin repeat domain are optionally missing, and wherein L at the second last position and/or N at the last position of SEQ ID NO: 18 are optionally exchanged by A.

7. The binding protein of claim 5, wherein said ankyrin repeat domain comprises the amino acid sequence of SEQ ID NO: 34, wherein G at position 1 and/or S at position 2 of said ankyrin repeat domain are optionally missing.

8. The binding protein of any of the preceding claims, wherein said ankyrin repeat domain binds to human FAP-expressing WI38 cells with an EC_{50} below 10^{-8}M and/or binding of said ankyrin repeat domain to FAP does not inhibit the prolyl endopeptidase activity of FAP by more than 25%.

9. The binding protein of any of the preceding claims, wherein said binding protein further comprises a biologically active molecule.

10. A nucleic acid encoding the binding protein of any of the preceding claims.

11. A pharmaceutical composition comprising the binding protein of any of claims 1 to 9 or the nucleic acid of claim 10, and optionally a pharmaceutically acceptable carrier and/or diluent.

12. Use of the binding protein of claim 9 in the manufacture of a medicament for localizing a biologically active molecule to FAP-expressing cells or tissue in a mammal.

13. Use of a therapeutically effective amount of the binding protein of claim 9 in the manufacture of a medicament for treating a medical condition of a patient in need thereof, wherein said biologically active molecule is a therapeutically effective molecule.

14. The use of any of claims 12 to 13, wherein said FAP-expressing cells or tissue are located in a tumor.

15. Use of the binding protein of claim 9 for imaging a tumor and/or diagnosing a cancer in a patient, wherein said biologically active molecule is a molecule effective for imaging cells or tissue bound by said binding protein.