

[0012] Described herein in another embodiment, is a process for the production of a single domain serum albumin binding protein according to the present disclosure, said process comprising culturing a host transformed or transfected with a vector comprising a nucleic acid sequence encoding a single domain serum albumin binding protein as described herein under conditions allowing the expression of the serum albumin binding protein and recovering and purifying the produced protein from the culture.

[0013] Further described is a method for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease comprising the administration of the single domain serum albumin binding protein according to the present disclosure, to a subject in need thereof. In some embodiments, the subject is human. In some embodiments, the method further comprises administration of an agent in combination with the single domain serum albumin binding protein according to the present disclosure.

[0013a] Provided herein in another embodiment is a single domain serum albumin binding protein as described herein for use in therapy.

[0013b] Provided herein in another embodiment is a use of a single domain serum albumin binding protein as described herein in the manufacture of a medicament for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease, wherein the medicament is to be administered to a subject in need thereof.

[0014] In another embodiment is described a multispecific binding protein comprising the single domain serum albumin binding protein according to the present disclosure. In another embodiment is described an antibody comprising the single domain serum albumin binding protein according to the present disclosure.

[0015] A further embodiment describes a multispecific antibody, a bispecific antibody, an sdAb, a variable heavy domain, a peptide, or a ligand, comprising the single domain serum albumin binding protein according to the present disclosure. In one embodiment is provided an antibody comprising the single domain serum albumin binding protein according to the present disclosure, wherein said antibody is a single domain antibody. In some embodiments, the single domain antibody is derived from a heavy chain variable region of IgG.

[0016] One embodiment describes a multispecific binding protein or antibody comprising the single domain serum albumin binding protein according to the present disclosure and a CD3 binding domain. In one embodiment is described a method for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease comprising administration of the multispecific antibody according to the present disclosure, to a subject in need thereof.

[0016a] Provided herein in another embodiment is a multispecific antibody as described herein for use in therapy.

[0016b] Provided herein in another embodiment is a use of a multispecific antibody as described herein in the manufacture of a medicament for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease, wherein the medicament is to be administered to a subject in need thereof.

99. The single domain serum albumin binding protein of any one of claims 74-91, wherein amino acid position 6 of CDR 1 (SEQ ID NO:11) is mutated to lysine, amino acid position 7 of CDR2 (SEQ ID NO: 12) is mutated to arginine, amino acid position 6 of CDR3 (SEQ ID NO: 13) is mutated to valine, and wherein the hKd and the cKd are between about 1 nM and about 5 nM.
100. The single domain serum albumin binding protein of any one of claims 74-91, wherein amino acid position 6 of CDR 1 (SEQ ID NO:11) is mutated to lysine, amino acid positions 7 and 13 of CDR2 (SEQ ID NO: 12) is mutated to arginine and glutamic acid, respectively, and amino acid position 6 of CDR3 (SEQ ID NO: 13) is mutated to valine, and wherein the hKd and the cKd are between about 1 nM and about 5 nM.
101. The single domain serum albumin binding protein of any one of claims 74-100, wherein said protein has an elimination half-time of at least 12 hours, at least 20 hours, at least 25 hours, at least 30 hours, at least 35 hours, at least 40 hours, at least 45 hours, at least 50 hours, or at least 100 hours.
102. A polynucleotide encoding a single domain serum albumin binding protein according to any one of claims 1-101.
103. A vector comprising the polynucleotide of claim 102.
104. A host cell transformed with the vector according to claim 103.
105. A pharmaceutical composition comprising (i) a single domain serum albumin binding protein according to any one of claims 1-101, the polynucleotide according to claim 102, the vector according to claim 103 or the host cell according to claim 104, and (ii) a pharmaceutically acceptable carrier.
106. A process for the production of a single domain serum albumin binding protein according to any one of claims 1-101, said process comprising culturing a host transformed or transfected with a vector comprising a nucleic acid sequence encoding a single domain serum albumin binding protein according to any one of claims 1-101 under conditions allowing the expression of the serum albumin binding protein and recovering and purifying the produced protein from the culture.
107. The single domain serum albumin binding protein according to any one of claims 1-101 for use in therapy.
108. Use of the single domain serum albumin binding protein according to any one of claims 1-101 in the manufacture of a medicament for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease, wherein the medicament is to be administered to a subject in need thereof.

109. The use of claim 108, wherein the subject is human.
110. The use of claim 109, wherein the method further comprises administration of an agent in combination with the single domain serum albumin binding protein according to any one of claims 1-100.
111. A multispecific binding protein comprising the single domain serum albumin binding protein according to any one of claim 1, claim 33, or claim 74.
112. An antibody comprising the single domain serum albumin binding protein according to claim 1, claim 33, or claim 74.
113. A multispecific antibody, a bispecific antibody, an sdAb, a variable heavy domain, a peptide, or a ligand, comprising the single domain serum albumin binding protein according to claim 1, claim 33, or claim 74.
114. An antibody comprising the single domain serum albumin binding protein according to claim 1, claim 33, or claim 74, wherein said antibody is a single domain antibody.
115. The single domain antibody of claim 114, wherein said antibody is derived from a heavy chain variable region of IgG.
116. A multispecific binding protein or antibody comprising the single domain serum albumin binding protein according to any one of claim 1, claim 33, or claim 74 and a CD3 binding domain.
117. The multispecific antibody according to any one of claims 112-116 for use in therapy.
118. Use of the multispecific antibody according to any one of claims 112-116 in the manufacture of a medicament for the treatment or amelioration of a proliferative disease, a tumorous disease, an inflammatory disease, an immunological disorder, an autoimmune disease, an infectious disease, a viral disease, an allergic reaction, a parasitic reaction, a graft-versus-host disease or a host-versus-graft disease, wherein the medicament is to be administered to a subject in need thereof.
119. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 4.
120. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 7.
121. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 9.
122. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 26.
123. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 27.

124. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 5.
125. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 6.
126. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 8.
127. The single domain serum albumin binding protein of any one of claims 1-101, wherein said protein comprises the amino acid sequence set forth as SEQ ID NO. 25.