Claims

1. A blood brain barrier shuttle comprising a full length IgG antibody directed to a brain target, a linker and one scFab directed to the transferrin receptor, wherein the scFab is coupled by the linker to the C-terminal end of the Fc part of one of the heavy chains of the full length IgG antibody directed to the brain target.

2. The blood brain barrier shuttle of claim 1, wherein the full length IgG antibody directed to a brain target is a full length antibody directed to Aβ.

3. The blood brain barrier shuttle of claim 2, wherein the antibody directed to Aβ comprises (a) H-CDR1 comprising the amino acid sequence of Seq. Id. No. 5, (b) H-CDR2 comprising the amino acid sequence of Seq. Id. No. 6, (c) H-CDR3 comprising the amino acid sequence of Seq. Id. No. 7, (d) L-CDR1 comprising the amino acid sequence of Seq. Id. No. 8, (e) L-CDR2 comprising the amino acid sequence of Seq. Id. No. 9 and (f) L-CDR3 comprising the amino acid sequence of Seq. Id. No. 10.

4. The blood brain barrier shuttle of claim 3, wherein the antibody directed to Abeta comprises a V_H domain comprising the amino acid sequence of Seq. Id. No. 11 and a V_L domain comprising the amino acid sequence of Seq. Id. No. 12.

5. The blood brain barrier shuttle of claim 1, wherein the full length IgG antibody directed to a brain target is a full length antibody directed to phosphorylated Tau.

6. The blood brain barrier shuttle of claim 1, wherein the full length IgG antibody directed to a brain target is a full length antibody directed to alpha synuclein.

7. The blood brain barrier shuttle of claims 1 to 6, wherein the linker is a peptide linker, preferably a peptide which is an amino acid sequence with a length of at least 20 amino acids, more preferably with a length of 25 to 50 amino acids.

8. The blood brain barrier shuttle of claims 1 to 7, wherein the scFab directed to the transferrin receptor is directed to the human transferrin receptor.