Claims

1. An antibody that specifically binds Tau, wherein the antibody comprises:

a) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:37 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:41;

b) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:36 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:40;

c) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:36 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:41;

d) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:36 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:42;

e) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:36 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:43;

f) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:37 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:40;

g) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:37 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:42;

h) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:37 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:43;

i) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:38 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:40;

j) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:38 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:41;

k) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:38 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:42;

l) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:38 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:43;

m) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:39 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:40;

n) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:39 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:41;

o) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:39 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:42; or

p) a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:39 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:43.

2. The antibody of claim 1, wherein the antibody comprises a heavy chain variable region comprising the amino acid sequence set forth in SEQ ID NO:37 and a light chain variable region comprising the amino acid sequence set forth in SEQ ID NO:41.

3. The antibody of claim 1 or 2, wherein the antibody comprises a heavy chain constant region of the isotype IgG1, IgG2, IgG3, or IgG4.

4. The antibody of claim 1 or 2, wherein the antibody comprises a heavy chain comprising the heavy chain variable region and a human IgG4 heavy chain constant region.

5. The antibody of claim 1 or 2, wherein the antibody comprises a heavy chain comprising the heavy chain variable region and a human IgG4 heavy chain constant region, wherein the heavy chain comprises a hinge region comprising an S241P substitution (Kabat numbering).

6. The antibody of claim 1 or 2, wherein the antibody comprises

(i) a heavy chain comprising the heavy chain variable region and a human IgG4 heavy chain constant region, and

(ii) a light chain comprising the light chain variable region and a human kappa light chain constant region.

7. The antibody of claim 1 or 2, wherein the antibody comprises

(i) a heavy chain comprising the heavy chain variable region and a human IgG4 heavy chain constant region, wherein the heavy chain comprises a hinge region comprising an S241P substitution (Kabat numbering), and

(ii) a light chain comprising the light chain variable region and a human kappa light chain constant region.

8. The antibody of claim 1 or 2, wherein the antibody is a Fv, scFv, Fab, F(ab')2, or Fab'.

9. The antibody of any one of the preceding claims, wherein the antibody comprises a covalently linked non-peptide synthetic polymer.

10. The antibody of claim 9, wherein the synthetic polymer is a poly(ethylene glycol) polymer.

11. The antibody of any one of the preceding claims, wherein the antibody is fused, directly or via a linker, to a carrier molecule, a peptide or a protein that promotes the crossing of the blood-brain barrier.

12. A pharmaceutical composition, comprising:
a) the antibody of any one of claims 1 to 11; and
b) a pharmaceutically acceptable excipient.

13. The pharmaceutical composition of claim 12, wherein the antibody is encapsulated in a liposome.

14. The pharmaceutical composition of claim 12 or 13, wherein the antibody is formulated with an agent that facilitates crossing the blood-brain barrier.

15. A recombinant expression vector comprising a nucleotide sequence encoding the antibody of any one of claims 1 to 11, wherein the nucleotide sequence is operably linked to a transcriptional control element that is active in a eukaryotic cell.

16. An in vitro host cell genetically modified with the recombinant expression vector of claim 15.

17. The antibody of any one of claims 1 to 11, or the pharmaceutical composition of any one of claims 12 to 14, for use in treatment of a tauopathy in a human subject.

18. The antibody or pharmaceutical composition for the use of claim 17, wherein the tauopathy is progressive supranuclear palsy.

19. The antibody or pharmaceutical composition for the use of claim 17, wherein the tauopathy is frontotemporal dementia.

20. The antibody or pharmaceutical composition for the use of claim 17, wherein the tauopathy is Alzheimer's disease.

21. A method of monitoring progression of a tauopathy in a human subject, the method comprising:

a) determining a first level of a Tau polypeptide in a biological sample obtained from the human subject at a first time point;

b) determining a second level of a Tau polypeptide in a biological sample obtained from the human subject at a second time point; and

c) comparing the second level of Tau with the first level of Tau, wherein said determining comprises:

i) contacting the biological sample with the antibody of any one of claims 1 to 11; and

ii) quantitating binding of the antibody to Tau polypeptide present in the sample.

22. The antibody of any one of claims 1 to 11 for use in an imaging method for detecting a Tau polypeptide in a brain tissue of a living human subject who has been administered the antibody.