CLAIMS

1. An isolated or recombinant Tau11i-derived polypeptide consisting of the amino acid sequence set forth in SEQ ID NO: 1 or SEQ ID NO: 2.

2. An isolated antibody or antigen-binding fragment thereof that specifically binds to the polypeptide consisting of the amino acid sequence set forth in SEQ ID NO:1 or SEQ ID NO: 2.

3. The isolated antibody or antigen-binding fragment thereof according to claim 2, wherein the antibody or antigen-binding fragment thereof comprises a heavy chain variable region comprising complementarity determining regions HCDR1 having an amino acid sequence set forth in SEQ ID NO: 31, HCDR2 having an amino acid sequence set forth in SEQ ID NO: 32, and HCDR3 having an amino acid sequence set forth in SEQ ID NO: 33, and/or a light chain variable region comprising complementarity determining regions LCDR1 having an amino acid sequence set forth in SEQ ID NO: 36, LCDR2 having an amino acid sequence set forth in SEQ ID NO:37, and LCDR3 having an amino acid sequence set forth in SEQ ID NO: 38.

4. The isolated antibody or antigen-binding fragment thereof according to claim 3, wherein the antibody or antigen-binding fragment thereof comprises a heavy chain variable region having the amino acid sequence set forth in SEQ ID NO: 29 and/or a light chain variable region having the amino acid sequence set forth in SEQ ID NO: 34.

5. An oligonucleotide for amplifying a polynucleotide sequence spanning the junction of exon 11 and intron 11 of a Tau gene, wherein the oligonucleotide consists of the nucleotide sequence set forth in SEQ ID NO: 7 or SEQ ID NO: 8.

6. A polynucleic acid molecule encoding:

   i) the polypeptide according to claim 1, or

   ii) the antibody or antigen binding fragment thereof according to any one of claims 2 to 4;

   wherein the polynucleic acid molecule is cDNA.

7. A method of detecting the polypeptide according to claim 1, the method comprises contacting a sample suspected of comprising the polypeptide with the antibody or antigen binding fragment thereof according to any one of claims 2 to 4.

8. A method for diagnosing Alzheimer's disease or identifying a subject at risk of developing Alzheimer's disease, wherein the method comprises:

(a) contacting a sample derived from the subject with the antibody or antigen binding fragment thereof according to any one of claims 3 to 6; or

(b) conducting a nucleic acid detection assay to assess the abundance of intron 11 retaining mRNA of a Tau gene in a sample derived from the subject; or

(c) contacting a sample derived from the subject with the Tau11i epitope-specific aptamer that specifically binds to a polypeptide comprising the amino acid sequence set forth in any one of SEQ ID NOs: 1, 2, 13, 14 or 15.

wherein the nucleic acid detection assay in (b) comprises amplifying a polynucleotide sequence spanning the junction of exon 11 and intron 11 of a Tau gene; and wherein the amplification comprises using oligonucleotides having the nucleotide sequences as set forth in SEQ ID NOs: 7 and/or SEQ ID NO: 8.

9. The method according to any one of claims 7-8, wherein the sample is brain tissue, cerebrospinal fluid, blood plasma, saliva, lacrimal fluid or urine.

10. A method of screening a candidate therapeutic or prophylactic drug for Alzheimer's disease, comprising using any of the following as an index:

a) reduction of the amount of Tau protein in the body of an Alzheimer's disease subject or a subject at risk of developing Alzheimer's disease, or
b) inhibition of production of Tau protein in the body of an Alzheimer's disease subject or a subject at risk of developing Alzheimer's disease,

wherein, the Tau protein comprises the amino acid sequence of the polypeptide according to claim 1.

11. A method of preparing a Tau11i-specific antibody, comprising

a) injecting the polypeptide according to claim 1 into an animal to induce an immune response to the polypeptide;
b) isolating antibodies that bind to the polypeptide;
c) selecting antibodies of (b) that binds to Tau11i but do not bind to full length Tau thereby producing an Tau11i-specific antibody.

12. The method according to claim 11, comprising

    a) injecting at least one non-human mammal with at least one Tau11i-derived polypeptide of claim 1 to form at least one B cell specific for Tau11i;
    b) selecting at least one B cell specific to the Tau11i;
    c) fusing the selected B cell with at least one immortalized cell to produce at least one hybridoma, wherein the hybridoma is capable of producing at least one antibody or a fragment thereof specific for the Tau11i; and
    d) optionally isolating the antibody from the hybridoma and sequencing the variable heavy and light chains.

13. A method of screening and/or selecting a Tau11i epitope-specific aptamer, the method comprises: conducting systematic evolution of ligands by exponential enrichment (SELEX) technique to identify Tau11i epitope-specific aptamers, wherein the SELEX technique comprises providing a polypeptide comprising the amino acid sequence set forth in any one of SEQ ID NOs: 1, 2, 13, 14 or 15 as a target ligand.

14. A Tau11i-specific aptamer capable of binding to a polypeptide comprising the amino acid sequence set forth in any one of SEQ ID NOs: 1, 2, 13, 14 or 15.

15. A kit comprising the antibody or antigen binding fragment thereof according to any one of claims 2 to 4.

16. The kit according to claim 15, further comprising the isolated polypeptide of claim 1.