ANTIBODIES TO TAU

GOVERNMENT SUPPORT

[0001] This invention was made with government support under 1R01NS071835 awarded by National Institute of Neurological Disorders and Stroke. The government has certain rights in the invention.

FIELD OF THE INVENTION

[0002] This invention relates to antibodies to tau and methods of use thereof.

BACKGROUND OF THE INVENTION

[0003] Aggregation of the microtubule associated protein tau is associated with several neurodegenerative disorders, including Alzheimer's disease (AD) and frontotemporal dementia. In AD, pathological tau aggregation spreads progressively throughout the brain, possibly along existing neural networks. AD is the most common cause of dementia and is an increasing public health problem. It is currently estimated to afflict 5 million people in the United States, with an expected increase to 13 million by the year 2050. Alzheimer’s Disease leads to loss of memory, cognitive function, and ultimately loss of independence. It takes a heavy personal and financial toll on the patient and the family. Because of the severity and increasing prevalence of the AD and other neurodegenerative diseases associated with aggregation of tau in the population, it is urgent that better treatments and detection methods be developed.

SUMMARY

[0003a] In one aspect, the present disclosure refers to isolated monoclonal anti-tau antibody, wherein the antibody comprises:

a light chain variable region comprising a CDR1 of amino acid sequence SEQ ID NO: 16, a CDR2 of amino acid sequence SEQ ID NO: 17, and a CDR3 of amino acid sequence SEQ ID NO: 18, and

a heavy chain variable region comprising a CDR1 of amino acid sequence SEQ ID NO: 19, a CDR2 of amino acid sequence SEQ ID NO: 20, and a CDR3 of amino acid sequence SEQ ID NO: 21.

REFERENCE TO COLOR FIGURES

[0004] The application file contains at least one photograph executed in color. Copies of this patent application publication with color photographs will be provided by the Office upon request and payment of the necessary fee.

IN THE CLAIMS

What is claimed is:

1. An isolated monoclonal anti-tau antibody, wherein the antibody comprises:

a light chain variable region comprising a CDR1 of amino acid sequence SEQ ID NO: 16, a CDR2 of amino acid sequence SEQ ID NO: 17, and a CDR3 of amino acid sequence SEQ ID NO: 18, and

a heavy chain variable region comprising a CDR1 of amino acid sequence SEQ ID NO: 19, a CDR2 of amino acid sequence SEQ ID NO: 20, and a CDR3 of amino acid sequence SEQ ID NO: 21.

2. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody specifically binds human tau with an Affinity of Interaction (KD) of 0.1 pM to 10 nM.

3. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody specifically binds human tau with an Affinity of Interaction (KD) of 0.1 pM to 1 nM.

4. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody specifically binds human tau and does not bind mouse tau.

5. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody is a humanized antibody.

6. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody is specifically able to block tau seeding activity in a cellular tau aggregation assay.

7. The isolated monoclonal anti-tau antibody of claim 1, wherein the antibody is a chimeric antibody.

8. The isolated monoclonal anti-tau antibody of claim 1, wherein the light chain variable region and the heavy chain variable region comprise framework regions.

9. The isolated monoclonal anti-tau antibody of claim 8, wherein the antibody is an IgG isotype.

10. The isolated monoclonal anti-tau antibody of claim 9, wherein the antibody is a chimeric antibody.

11. The isolated monoclonal anti-tau antibody of claim 9, wherein the antibody is a humanized antibody.

12. The isolated monoclonal anti-tau antibody of claim 9, wherein the antibody is an IgG4 isotype.

13. The isolated monoclonal anti-tau antibody of claim 12, wherein the antibody is a chimeric antibody.

14. The isolated monoclonal anti-tau antibody of claim 12, wherein the antibody is a humanized antibody.