[0018] The present disclosure provides an anti-TrkB antibody or an antigen-binding fragment thereof comprising:

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 48 (L-CDR1); the amino acid sequence of SEQ ID NO: 49 (L-CDR2); and the amino acid sequence of SEQ ID NO: 50 (L-CDR3); and

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 51 (H-CDR1); the amino acid sequence of SEQ ID NO: 52 (H-CDR2); and the amino acid sequence of SEQ ID NO: 53 (H-CDR3), or

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 55 (H-CDR1); the amino acid sequence of SEQ ID NO: 56 (H-CDR2); and the amino acid sequence of SEQ ID NO: 57 (H-CDR3), or

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 58 (H-CDR1); the amino acid sequence of SEQ ID NO: 59 (H-CDR2); and the amino acid sequence of SEQ ID NO: 60 (H-CDR3).

[0018a] In one aspect, the present disclosure provides an anti-TrkB antibody or an antigen-binding fragment thereof comprising:

a. a light chain variable region comprising a light chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 48; a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 49; and a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 50 (L-CDR3); and

b. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 51; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 52; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 53, or

c. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 55; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 56; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 57, or

d. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 58; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 59; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 60.

[0019] In one example, the present disclosure provides an anti-TrkB antibody or an antigen-binding fragment thereof comprising:

a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 2 and SEQ ID NO: 12, respectively,

a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 3 and SEQ ID NO: 13, respectively,

a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 4 and SEQ ID NO: 14, respectively,

a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 5 and SEQ ID NO: 15, respectively,

a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 6 and SEQ ID NO: 16, respectively,

chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof.

[0030] In one aspect, the present disclosure provides an expression vector comprising an isolated polynucleotide or polynucleotides encoding a light chain or light chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof.

[0031] In one aspect, the present disclosure provides a viral vector comprising an isolated polynucleotide or polynucleotides encoding a light chain or light chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof.

[0032] In one aspect, the present disclosure provides a host cell comprising an expression vector or an isolated polynucleotide or polynucleotides encoding a light chain or light chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof.

[0033] In one aspect, the present disclosure provides a method for producing an anti-TrkB antibody or an antigen-binding fragment thereof comprising:

obtaining a host cell comprising an expression vector or an isolated polynucleotide or polynucleotides encoding a light chain or light chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof; and cultivating the host cell.

[0034] In one example, the method for producing an anti-TrkB antibody or antigen-binding fragment thereof further comprises recovering and purifying the anti-TrkB antibody or antigen-binding fragment thereof.

[0035] The present disclosure provides an anti-TrkB antibody or antigen-binding fragment thereof that binds to at least one amino acid

residue within amino acid regions 92-112, 130-143 and/or 205-219 of the extracellular domain of human TrkB with the SEQ ID NO: 54.

[0036] In one example, the present in disclosure vention provides an anti-TrkB antibody or antigen-binding fragment thereof that binds to at least one amino acid residue within amino acid regions 92-112 and 130-143; or 92-112 and 205-219; or 130-143 and 205-219; or 92-112 and 130-143 and 205-219 of the extracellular domain of human TrkB with the SEQ ID NO: 54.

[0037] In one example, the present disclosure provides an anti-TrkB antibody or antigen-binding fragment thereof that binds to at least one amino acid residue within any of the aforementioned combinations and further also to at least one amino acid residue within amino acid regions 313-330 and/or 348-367 of the extracellular domain of human TrkB with the SEQ ID NO: 54.

[0038] In one example, the present disclosure provides an anti-TrkB antibody or antigen-binding fragment thereof that binds to at least one amino acid residue within amino acid regions 92-112, 130-143, 205-219, 313-330 and 348-367 of the extracellular domain of human TrkB with the SEQ ID NO: 54.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] **FIGURE 1:** Epitope mapping of BDNF, 277-antibody, C2 or C20 antibodies to the extracellular domain of human TrkB.

[0040] **FIGURE 2:** qPCR expression data (y-axis) for regulated genes (x-axis) with regard to synaptic plasticity in SH-SY5Y cells after treatment with BDNF, control IgG1 (anti-2,4,6-trinitrophenyl, anti-TNP) or D003 antibody.

[0041] **FIGURE 3:** Plot of the concentration of 277-antibody in ocular compartments as indicated and plasma after ivt injection of 1 mg of 277-antibody into rabbit eyes as a function of time.

[0042] **FIGURE 4:** Calculated ocular PK of IgG1 antibodies. Y-axis shows the vitreal concentration and x-axis the days post ivt application. The time post

CLAIMS

1. An anti-TrkB antibody or an antigen-binding fragment thereof comprising:

a. a light chain variable region comprising a light chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 48; a light chain CDR2 comprising the amino acid sequence of SEQ ID NO: 49; and a light chain CDR3 comprising the amino acid sequence of SEQ ID NO: 50 (L-CDR3); and

b. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 51; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 52; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 53, or

c. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 55; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 56; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 57, or

d. a heavy chain variable region comprising a heavy chain complementarity determining region (CDR) 1 comprising the amino acid sequence of SEQ ID NO: 58; a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO: 59; and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO: 60.

2. The anti-TrkB antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody or the antigen-binding fragment thereof comprises:

a. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 2 and a variable heavy chain

comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 12,

b. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 3 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 13,

c. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 4 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 14,

d. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 5 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 15,

e. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 6 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 16,

f. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 7 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 17,

g. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 8 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 18,

h. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 9 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 19, or

i. a variable light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 10 and a variable heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence SEQ ID NO: 20.

3. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 21 and and a heavy chain comprising an

amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 22 or 23,

b. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 24 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 25 or 26,

c. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 27 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 28 or 29,

d. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 30 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 31 or 32,

e. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 33 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 34 or 35,

f. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 36 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 37 or 38,

g. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 39 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 40 or 41,

h. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 42 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 43 or 44,

i. a light chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 45 and and a heavy chain comprising an amino acid sequence at least 80%, at least 90%, at least 95%, at least 98%, or at least 99% identical to the amino acid sequence of SEQ ID NO: 46 or 47.

4. The anti-TrkB antibody or the antigen-binding fragment thereof according to claim 1, wherein the antibody or the antigen-binding fragment thereof comprises:

a. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 2 and SEQ ID NO: 12, respectively,

b. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 3 and SEQ ID NO: 13, respectively,

c. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 4 and SEQ ID NO: 14, respectively,

d. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 5 and SEQ ID NO: 15, respectively,

e. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 6 and SEQ ID NO: 16, respectively,

f. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 7 and SEQ ID NO: 17, respectively,

g. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 8 and SEQ ID NO: 18, respectively,

h. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 9 and SEQ ID NO: 19, respectively,or

i. a variable light chain and a variable heavy chain comprising the amino acid sequences of SEQ ID NO: 10 and SEQ ID NO: 20, respectively.

5. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a. a light chain comprising the amino acid sequence of SEQ ID NO: 21 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 22 or 23,

b. a light chain comprising the amino acid sequence of SEQ ID NO: 24 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 25 or 26,

c. a light chain comprising the amino acid sequence of SEQ ID NO: 27 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 28 or 29,

d. a light chain comprising the amino acid sequence of SEQ ID NO: 30 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 31 or 32,

e. a light chain comprising the amino acid sequence of SEQ ID NO: 33 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 34 or 35,

f. a light chain comprising the amino acid sequence of SEQ ID NO: 36 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 37 or 38,

g. a light chain comprising the amino acid sequence of SEQ ID NO: 39 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 40 or 41,

h. a light chain comprising the amino acid sequence of SEQ ID NO: 42 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 43 or 44, or

i. a light chain comprising the amino acid sequence of SEQ ID NO: 45 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 46 or 47, respectively.

6. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 21 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 22 or 23.

7. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 24 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 25 or 26.

8. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 27 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 28 or 29.

9. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 30 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 31 or 32.

10. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 33 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 34 or 35.

11. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 36 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 37 or 38.

12. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 39 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 40 or 41.

13. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 42 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 43 or 44.

14. The anti-TrkB antibody according to claim 1, wherein the antibody comprises:

a light chain comprising the amino acid sequence of SEQ ID NO: 45 and and a heavy chain comprising the amino acid sequence of SEQ ID NO: 46 or 47.

15. An antibody or an antigen-binding fragment according to any of claims 1 to 14 for use in medicine.

16. The antibody or the antigen-binding fragment for the use according to claim 15, wherein the use is the treatment of eye or retinal or neurodegenerative diseases.

17. The antibody or the antigen-binding fragment for the use according to claim 16, wherein the use is for the treatment of neural/neuronal eye or retinal diseases.

18. The antibody or the antigen-binding fragment for the use according to claim 16, wherein the use is for the treatment of geographic atrophy.

19. The antibody or the antigen-binding fragment for the use according to claim 15, wherein the use is for the treatment of age-related macular degeneration, diabetic retinopathy, diabetic macular edema, retinitis pigmentosa, inherited retinal dystrophy, inherited macular dystrophy, myopic degeneration, retinal vein occlusions, retinal artery occlusions, endophthalmitis, uveitis, cystoid macular edema, choroidal neovascular membrane secondary to any retinal diseases, optic neuropathies, glaucoma, retinal detachment, toxic retinopathy, radiation retinopathy, and traumatic retinopathy, prodromal and mild-to-moderate alzheimer´s diseases, delaying disease progression of patients with Alzheimer´s disease, Huntington´s disease, Parkinson´s disease, major depressive disorder, schizophrenia, cognitive impairment associated with schizophrenia, prevention of first-episode psychosis in individuals with attenuated psychosis syndrome, prevention of relapse in patients with schizophrenia, treatment-resistant depression, hyperphagia, obesity or metabolic syndrome.

20. A pharmaceutical composition comprising an antibody or an antigen-binding fragment according to any of claims 1 to 14 and a pharmaceutically acceptable carrier.

21. The antibody or the antigen-binding fragment thereof according to any of claims 1 to 14 or the pharmaceutical compostion according to claim 20, wherein said antibody or antigen-binding fragment thereof is administered by a parenteral route, intravenous route, intravitreal route or subcutaneous route of administration.

22. An isolated polynucleotide or polynucleotides comprising a sequence encoding a light chain or light chain variable region of an antibody or antigen-binding fragment thereof and a heavy chain or heavy chain variable region of an antibody or antigen-binding fragment thereof according to any of claims 1 to 14.

23. An expression vector comprising the isolated polynucleotide or polynucleotides of claim 22.

24. A viral vector comprising the isolated polynucleotide or polynucleotides of claim 22.

25. A host cell comprising an isolated polynucleotide or polynucleotides according to claim 22 or an expression vector according to claim 23.

26. A method for producing an anti-TrkB antibody or antigen-binding fragment thereof comprising:

a. obtaining a host cell according to claim 25; and

b. cultivating the host cell.

27. The method according to claim 26, further comprising recovering and purifying the antibody or antigen-binding fragment thereof.