CLAIMS

What is claimed is:

1. An isolated antibody that binds to rabies virus glycoprotein wherein:

   a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

   b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

2. The isolated antibody of claim 1, wherein the antibody comprises heavy chain CDR sequences: DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), and QGGDGNYVLFDY (SEQ ID NO:58) and comprises light chain CDR sequences: KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), and QQYNSYPFT (SEQ ID NO:64).

3. The isolated antibody of claim 1, wherein the antibody comprises heavy chain CDR sequences: GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61) and comprises light chain CDR sequences: KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

4. An isolated antibody that binds to rabies virus glycoprotein, wherein the antibody has the same antigen binding specificity as an antibody produced by a hybridoma cell line selected from the group consisting of CGMCC Accession Nos. 4805 and 4806.

5. The isolated antibody of any one of claims 1-4, wherein the antibody is capable of reducing the infectivity of rabies virus and does not interfere with the immunogenicity of a rabies vaccine.

6. The isolated antibody of any one of claims 1-5, wherein the antibody is selected from a group consisting of a monoclonal antibody, a murine antibody, a chimeric antibody, and a humanized antibody.

7. A pharmaceutical composition comprising one or more antibodies of any of claims 1-6 and a pharmaceutically acceptable carrier.

8. The pharmaceutical composition of claim 7 comprising a cocktail of antibodies wherein a first antibody comprises heavy chain CDR sequences: DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), and QGGDGNYVLFDY (SEQ ID NO:58) and comprises light chain CDR sequences: KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), and QQYNSYPFT (SEQ ID NO:64); and wherein a second antibody comprises heavy chain CDR sequences: GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61) and comprises light chain CDR sequences: KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

9. The use of the antibody of any one of claims 1-6 in the manufacture of a medicament for treating rabies infection in a subject in need thereof.

10. The use of claim 9, wherein the antibody reduces the infectivity of rabies virus but does not interfere with the immunogenicity of a rabies vaccine.

11. A method for treating rabies infection in a subject in need thereof comprising administering to the subject an effective amount of one or more of the antibodies of any one of claims 1-6.

12. The method of claim 11, wherein the antibody is selected from a group consisting of a monoclonal antibody, a murine antibody, a chimeric antibody, and a humanized antibody.

13. The method of claim 11, wherein the antibody is administered to the subject before, after, or simultaneously with a rabies vaccine.

14. The method of claim 11, wherein the antibody is administered to the subject before, after, or simultaneously with an anti-rabies immunoglobulin.

15. A kit for treating rabies infection in a subject in need thereof comprising one or more antibodies that bind to rabies virus glycoprotein and instructions for use of the antibody, wherein:

a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

16. A kit for detecting rabies virus in a sample comprising an antibody that binds to rabies virus glycoprotein and instructions for use of the antibody, wherein:

a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

17. The kit of claim 16, wherein the antibody is coupled to one or more detectable labels.

18. The kit of claim 16, further comprising a secondary antibody that binds specifically to the rabies virus glycoprotein antibody.

19. An isolated nucleic acid encoding the antibody of any one of claims 1-6.

20. A host cell comprising the isolated nucleic acid of claim 19.

CLAIMS

1. An isolated antibody that binds to rabies virus glycoprotein wherein:

   a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

   b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

2. The isolated antibody of claim 1, wherein the antibody comprises heavy chain CDR sequences: DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), and QGGDGNYVLFDY (SEQ ID NO:58) and comprises light chain CDR sequences: KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), and QQYNSYPFT (SEQ ID NO:64).

3. The isolated antibody of claim 1, wherein the antibody comprises heavy chain CDR sequences: GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61) and comprises light chain CDR sequences: KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

4. An isolated antibody that binds to rabies virus glycoprotein, wherein the antibody has the same antigen binding specificity as an antibody produced by a hybridoma cell line selected from the group consisting of CGMCC Accession Nos. 4805 and 4806.

5. The isolated antibody of any one of claims 1-4, wherein the antibody is capable of reducing the infectivity of rabies virus and does not interfere with the immunogenicity of a rabies vaccine.

6. The isolated antibody of any one of claims 1-5, wherein the antibody is selected from a group consisting of a monoclonal antibody, a murine antibody, a chimeric antibody, and a humanized antibody.

7. A pharmaceutical composition comprising one or more antibodies of any of claims 1-6 and a pharmaceutically acceptable carrier.

8. The pharmaceutical composition of claim 7 comprising a cocktail of antibodies wherein a first antibody comprises heavy chain CDR sequences: DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), and QGGDGNYVLFDY (SEQ ID NO:58) and comprises light chain CDR sequences: KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), and QQYNSYPFT (SEQ ID NO:64); and wherein a second antibody comprises heavy chain CDR sequences: GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61) and comprises light chain CDR sequences: KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

9. The use of the antibody of any one of claims 1-6 in the manufacture of a medicament for treating rabies infection in a subject in need thereof.

10. The use of claim 9, wherein the antibody reduces the infectivity of rabies virus but does not interfere with the immunogenicity of a rabies vaccine.

11. The use of claim 9, wherein the antibody is administered to the subject before, after, or simultaneously with a rabies vaccine.

12. The use of claim 9, wherein the antibody is administered to the subject before, after, or simultaneously with an anti-rabies immunoglobulin.

13. A kit for treating rabies infection in a subject in need thereof comprising one or more antibodies that bind to rabies virus glycoprotein and instructions for use of the antibody, wherein:

a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56),

DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

14. A kit for detecting rabies virus in a sample comprising an antibody that binds to rabies virus glycoprotein and instructions for use of the antibody, wherein:

a. the antibody comprises one or more heavy chain CDR amino acid sequences selected from the group consisting of DYIML (SEQ ID NO:56), DIYPYYGSTSYNLKFKG (SEQ ID NO:57), QGGDGNYVLFDY (SEQ ID NO:58), GFAMS (SEQ ID NO:59), TISSGGTYTYSPDSVMG (SEQ ID NO:60), and RLRRNYYSMDY (SEQ ID NO:61); and

b. the antibody comprises one or more light chain CDR amino acid sequences selected from the group consisting of KASQNVGTTVA (SEQ ID NO:62), SASYRYS (SEQ ID NO:63), QQYNSYPFT (SEQ ID NO:64), KSTKSLLNSDGFTYLD (SEQ ID NO:65), LVSNRFS (SEQ ID NO:66), and FQSNYLPFT (SEQ ID NO:67).

15. The kit of claim 14, wherein the antibody is coupled to one or more detectable labels.

16. The kit of claim 14, further comprising a secondary antibody that binds specifically to the rabies virus glycoprotein antibody.

17. An isolated nucleic acid encoding the antibody of any one of claims 1-6.

18. A host cell comprising the isolated nucleic acid of claim 17.