CLAIMS

1. Use of autologous cytotoxic T cells (CTLs) expressing a T cell receptor that specifically binds to an EBV peptide presented on a class I MHC in the manufacture of a medicament for treating or preventing secondary progressive multiple sclerosis (MS) or primary progressive MS in a subject, wherein the peptide-specific autologous CTLs are to be administered to the subject if at least 30% of the CTLs express CD107a, IFNγ, TNFa, and IL-2.

2. The use of claim 1, wherein at least 40%, at least 50%, or at least 70% of the CTLs express CD107a, IFNγ, TNFa, and IL-2.

3. Use of cytotoxic T cells (CTLs) in the manufacture of a medicament for treating or preventing secondary progressive multiple sclerosis (MS) or primary progressive MS in a subject, wherein the CTLs are prepared according to a method comprising:

a) isolating a sample comprising cytotoxic T cells (CTLs) from the subject,

b) incubating an *ex vivo* sample comprising cytotoxic T cells (CTLs) with antigen-presenting cells (APCs) presenting an EBV peptide, thereby inducing proliferation of peptide-specific autologous CTLs in the sample,

c) analyzing the expression of CD107a , IFNγ, TNFa , and IL-2 by the proliferated peptide-specific autologous CTLs; and

wherein the peptide-specific autologous CTLs are to be administered to the subject if at least a portion of the CTLs express CD107a, IFNγ, TNFa, and IL-2, and at least 7% of the proliferated peptide-specific autologous CTLs express IFNγ.

4. Use of peptide-specific autologous CTLs in the manufacture of a medicament for treating or preventing secondary progressive multiple sclerosis (MS) or primary progressive MS in a subject, wherein the CTLs are prepared *ex vivo* according to a method comprising:

a) incubating antigen-presenting cells (APCs) with a nucleic acid construct encoding for an EBV peptide, thereby inducing the APCs to present an EBV peptide; and

b) inducing peptide-specific autologous CTL proliferation by incubating a sample comprising autologous CTLs with the antigen-presenting cells (APCs), thereby inducing the peptide-specific autologous CTLs to proliferate and

c) analyzing the expression of CD107a, IFNγ, TNFa, and IL-2 by the proliferated peptide-specific autologous CTLs; and

wherein the peptide-specific autologous CTLs are to be administered to the subject if at least a portion of the CTLs express CD107a, IFNγ, TNFa, and IL-2, and at least 7% of the proliferated peptide-specific autologous CTLs express IFNγ.

5. The use of claim 4, wherein the nucleic acid construct is AdE1-LMPpoly.

6. The use of claim 4 or 5, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the proliferated peptide-specific autologous CTLs express CD107a.

7. The use of any one of claims 4 to 6, wherein at least 10%, at least 15%, or at least 20% of the proliferated peptide-specific autologous CTLs express IFNγ.

8. The use of any one of claims 4 to 7, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the proliferated peptide-specific autologous CTLs express TNFa.

9. The use of any one of claims 4 to 8, wherein at least 1%, at least 5%, at least 10%, or at least 15% of the proliferated peptide-specific autologous CTLs express IL-2.

10. The use of any one of claims 4 to 9, wherein the proliferated peptide-specific autologous CTLs, and at least 20%, at least 30%, at least 40%, or at least 50% of the proliferated peptide-specific autologous CTLs express CD107a, TNFa, IFNγ, and IL-2.

11. The use of any one of claims 4 to 10, wherein the APCs comprise B cells, antigen-presenting T-cells dendritic cells, artificial antigen-presenting cells, or aK562 cells.

12. The use of any one of claims 1 to 11, wherein the EBV peptide comprises an amino acid sequence listed in Table 1.

13. The use of any one of claims 1 to 11, wherein the EBV peptide comprises a LMP1 peptide or fragment thereof, a LMP2A peptide or fragment thereof, or an EBNA1 peptide or fragment thereof.

14. The use of any one of the preceding claims, wherein a dose of the medicament comprises about 5×10^6 CTLs, about 1×10^7 CTLs, about 1.5×10^7 CTLs, or about 2×10^7 CTLs.

15. Use of autologous cytotoxic T cells (CTLs) of any one of claims 1 to 14, in the manufacture of a medicament for reducing anti-EBV IgG levels in the CSF in a subject with secondary progressive MS or primary progressive MS.

16. Use of cytotoxic T cells (CTLs) in the manufacture of a medicament for treating or preventing secondary progressive multiple sclerosis (MS) or primary progressive MS in a subject, wherein the CTLs are prepared according to a method comprising:

a) isolating a sample comprising cytotoxic T cells (CTLs) from the subject,

b) incubating an *ex vivo* sample comprising cytotoxic T cells (CTLs) with antigen-presenting cells (APCs) presenting an EBV peptide, thereby inducing proliferation of peptide-specific autologous CTLs in the sample,

c) analyzing the expression of CD107a , IFNγ, TNFa , and IL-2 by the proliferated peptide-specific autologous CTLs; and

wherein the peptide-specific autologous CTLs are to be administered to the subject if at least 30% of the CTLs express CD107a, IFNγ, TNFa, and IL-2.

17. Use of peptide-specific autologous CTLs in the manufacture of a medicament for treating or preventing secondary progressive multiple sclerosis (MS) or primary progressive MS in a subject, wherein the CTLs are prepared *ex vivo* according to a method comprising:

a) incubating antigen-presenting cells (APCs) with a nucleic acid construct encoding for an EBV peptide, thereby inducing the APCs to present an EBV peptide; and

b) inducing peptide-specific autologous CTL proliferation by incubating a sample comprising autologous CTLs with the antigen-presenting cells (APCs), thereby inducing the peptide-specific autologous CTLs to proliferate and

c) analyzing the expression of CD107a, IFNγ, TNFa, and IL-2 by the proliferated peptide-specific autologous CTLs; and

wherein the peptide-specific autologous CTLs are to be administered to the subject if at least 30% of the CTLs express CD107a, IFNγ, TNFa, and IL-2.