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 at least a portion of the CTLs express CD107a, IFNγ, TNFa, and IL-2, and wherein at least 7% of the CTLs express IFNγ.

2. The use of claim 1, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the CTLs express CD107a.

3. The use of claim 1 or 2, wherein at least 10%, at least 15%, or at least 20%, of the CTLs express IFNγ.

4. The use of any one of claims 1 to 3, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the CTLs express TNF.

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

6. The use of claim 1, wherein at least 30%, at least 40%, at least 50%, or at least 70% of the CTLs express CD107a, IFNγ, TNFa, and IL-2.

7. 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 T cells 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.

8. 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 CTL proliferation by incubating a sample comprising autologous CTLs with the antigen-presenting cells (APCs), thereby inducing the 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.

9. The use of claim 8, wherein the nucleic acid construct is AdE1-LMPpoly.

10. The use of claim 8 or 9, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the proliferated peptide-specific autologous CTLs express CD107a.

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

12. The use of any one of claims 8 to 11, wherein at least 5%, at least 10%, at least 15%, or at least 20% of the proliferated peptide-specific autologous CTLs express TNF.

13. The use of any one of claims 8 to 12, wherein at least 1%, at least 5%, at least 10%, or at least 15% of the proliferated peptide-specific autologous CTLs express IL-2.

14. The use of any one of claims 8 to 13, 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, TNF, IFNγ, and IL-2.

15. The use of any one of claims 8 to 14, wherein the APCs comprise B cells, antigen-presenting T-cells dendritic cells, artificial antigen-presenting cells, or aK562 cells.

16. The use of any one of claims 1 to 15, wherein the EBV peptide comprises an amino acid sequence listed in Table 1.

17. The use of any one of claims 1 to 15, wherein the EBV peptide comprises a LMP1 peptide or fragment thereof, a LMP2A peptide or fragment thereof, or an EBNA1 peptide or fragment thereof.

18. 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.

19. Use of autologous cytotoxic T cells (CTLs) of any one of claims 1 to 18, 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.