CLAIMS

1. A method of treating a disease or disorder in a subject in need thereof comprising

a. obtaining a population of B cells from a source;

b. culturing said B cells in a culture medium comprising a CD40L fusion protein, and a CD40L cross-linking agent;

c. engineering said B cells to express either a payload, a chimeric receptor or both; and

d. administering said B cells to said subject.

2. The method of claim 1, wherein the source is a mammal.

3. The method of claim 2, wherein said source is a biological sample comprising peripheral mononuclear blood cells.

4. The method of claim 1, wherein the CD40L fusion protein comprises an amino acid sequence at least 85% identical to SEQ ID NO. 3.

5. The method of claim 1, wherein the CD40L fusion protein comprises an amino acid sequence at least 95% identical to SEQ ID No. 3.

6. The method of claim 1, wherein the CD40L fusion protein comprises an amino acid sequence of SEQ ID NO. 3.

7. The method of claim 1, wherein the CD40L crosslinking agent is an antibody.

8. The method of claim 7, wherein the antibody comprises a light chain variable region comprising the amino acid sequence at least 95% identical to SEQ ID NO. 5 and a heavy chain variable region comprising the amino acid sequence at least 95% identical to SEQ ID NO. 7.

9. The method of claim 8, wherein the antibody comprises a light chain variable region comprising the amino acid sequence of SEQ ID NO. 5 and a heavy chain variable region comprising the amino acid sequence of SEQ ID NO. 7.

10. The method of claim 1, wherein the B cell is engineered prior to culturing said B cells in a medium with CD40L fusion protein and a CD40L crosslinking agent.

11. The method of claim 1, wherein the B cell is engineered after culturing said B cells in a medium with CD40L fusion protein and a CD40L crosslinking agent.

12. The method of claim 1, further comprising culturing said B cells in the presence of IL-4.

13. The method of claim 1, further comprising culturing said B cells in the presence of IL-21.

14. The method of claim 1, wherein the cultured B cells express at least one of the following markers: CD62L, CCR7, CD80, CD86, CD54, ICAM, CD58, or CD27.

15. The method of claim 1, wherein the disease or disorder is selected from the group consisting of at least one of cancer, heart disease, inflammatory disease, muscle wasting disease, or neurological disease.

16. The method of claim 15, wherein the cancer is at least one of breast cancer, colon cancer, rectal cancer, esophageal cancer; lung cancer, pancreatic cancer, stomach cancer, liver cancer, hepatocellular carcinoma, stromal tumors such as GIST, glioblastoma, and glioma.

17. The method of claim 1, wherein at least about $3x10^7$ B cells are administered to said subject.

18. The method of claim 1, wherein the population of B cells are cultured for at least 14 days.

19. A method of treating a disease or disorder in a subject in need thereof comprising

a. obtaining a population of B cells from a source;

b. culturing said B cells in a culture medium comprising a CD40L fusion protein, wherein said CD40L fusion protein comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO. 3, and a CD40L cross-linking antibody whose light chain variable region is at least 95% identical to the amino acid sequence of SEQ ID NO: 5 and whose heavy chain variable region is at least 95% identical to the amino acid sequence of SEQ ID NO: 7; and

c. administering said B cells to said subject.

20. The method of claim 19, wherein the source is a mammal.