CLAIMS

1. Use of a composition comprising a bacterial strain of the genus *Parabacteroides*, in the manufacture of a vaccine adjuvant.

2. Use of a composition comprising a bacterial strain of the genus *Parabacteroides* in the manufacture of a medicament for treating, preventing or delaying immunosenescence in a subject.

3. Use of a composition comprising a bacterial strain of the genus *Parabacteroides* in the manufacture of a medicament for chimeric antigen receptor T cell (CAR-T) therapy, mesenchymal stem cell (MSC) therapy or stem cell transplantation therapy in a subject.

4. A vaccine composition comprising a bacterial strain of the genus *Parabacteroides* and one or more antigens.

5. A vaccine composition according to claim 4, comprising one or more pathogen antigens or tumour antigens.

6. The use according to any one of claims 1 to 3 or the composition according to claim 4 or 5, wherein the bacterial strain belongs to the species *Parabacteroides distasonis*, *Parabacteroides goldsteinii* or *Parabacteroides merdae*.

7. The use according to any one of claims 1 to 3 or 6 or the composition according to any one of claims 4 to 6, wherein the bacterial strain has a 16s rRNA gene sequence that is at least 95%, 96%, 97%, 98%, 99%, 99.5% or 99.9% identical to SEQ ID NO:9 or wherein the bacterial strain has a 16s rRNA gene sequence represented by SEQ ID NO:9.

8. The use according to any one of claims 1 to 3, 6 or 7 or the composition according to any one of claims 4 to 7, wherein the bacterial strain is the strain deposited under accession number 42382 at NCIMB.

9. The use according to any one of claims 1 to 3 or 6 or the composition according to any one of claims 4 to 6, wherein the bacterial strain has a 16s rRNA gene sequence that is at least 98%, 99%, 99.5% or 99.9% identical to SEQ ID NO: 9, 12, 13, 16, 17, or 19, or wherein the bacterial strain has a 16s rRNA gene sequence represented by SEQ ID NO: 9, 12, 13, 16, 17, or 19.

10. The use according to any one of claims 1 to 3 or 6 or the composition according to any one of claims 4 to 6, wherein the bacterial strain has a 16s rRNA gene sequence that is at least 98%, 99%, 99.5% or 99.9% identical to SEQ ID NO: 10 or 11, or wherein the bacterial strain has a 16s rRNA gene sequence represented by SEQ ID NO: 10 or 11.

11. The use according to any one of claims 1 to 3 or 6 or the composition according to any one of claims 4 to 6, wherein the bacterial strain has a 16s rRNA gene sequence that is at least 98%, 99%, 99.5% or 99.9% identical to SEQ ID NO: 18, or wherein the bacterial strain has a 16s rRNA gene sequence represented by SEQ ID NO: 18.

12. The use according to any one of claims 1 to 3 or the composition according to claim 4 or claim 5, wherein the bacterial strain has a 16s rRNA gene sequence that is at least 98%, 99%, 99.5% or 99.9% identical to SEQ ID NO: 15, or wherein the bacterial strain has a 16s rRNA gene sequence represented by SEQ ID NO: 15.

13. The use according to any one of claims 1 or 6 to 12 or the composition according to any one of claims 4 to 12, wherein the composition or medicament comprises one or more pathogen antigens selected from viral antigens, such as viral surface proteins; bacterial antigens, such as protein and/or saccharide antigens; fungal antigens; and parasite antigens.

14. The use or composition of claim 13, wherein the antigens are from any of the following pathogens: influenza virus, HIV, hookworm, hepatitis B virus, herpes simplex virus, rabies, respiratory syncytial virus, cytomegalovirus, Staphylococcus aureus, chlamydia, SARS coronavirus, varicella zoster virus, Streptococcus pneumoniae, Neisseria meningitidis, Mycobacterium tuberculosis, Bacillus anthracis, Epstein Barr virus, or human papillomavirus.

15. The use or composition of claim 14, wherein the composition or medicament comprises one or more influenza virus antigens.

16. The use according to any one of claims 1 or 6 to 12 or the composition according to any one of claims 4 to 12, wherein the composition or medicament comprises one or more antigens selected from neoantigens, glycoprotein antigens, lipoglycan antigens, archaea antigens, melanoma antigen E (MAGE), Carcinoembryonic antigen (CEA), MUC-1, HER2, sialyl-Tn (STn), human telomerase reverse transcriptase (hTERT), Wilms tumour gene (WT1), CA-125, prostate-specific antigen (PSA), oncoproteins, amyloid-beta, Tau, PCSK9 or habit forming substances such as alcohol or opiates.

17. The use according to any one of claims 1 to 3 or 6 to 16 or the composition according to any one of claims 4 to 16, wherein the composition or medicament is for oral administration, and/or comprises one or more pharmaceutically acceptable excipients or carriers, and/or wherein the bacterial strain is lyophilised.

18. The use according to any one of claims 1 to 3 or 6 to 17 or the composition according to any one of claims 4 to 17, wherein the bacterial strain expresses a heterologous antigen, such as a pathogen antigen or a tumour antigen.

19. The composition of any of claims 4-18, for use in medicine.

20. The use according to any one of claims 1 to 3 or 6 to 18 or the composition according to any one of claims 4 to 19, wherein the composition or medicament is for increasing the expression level and/or activity of MCP-1 and / or the expansion of B-cells.

21. The use or composition of claim 20, wherein the B cells include CD19+CD3- B cells.

22. The use according to any one of claims 1, 6 to 18, 20 or 21 or the composition according to any one of claims 4 to 21, wherein the composition or medicament is for the therapy of a viral infection, a bacterial infection, a fungal infection, a parasitic infection or a tumour.

23. The use or composition of claim 22, wherein the composition or medicament is for the therapy of an influenza virus infection.

24. The use according to any one of claims 2, 6 to 12, 17, 20 or 21, wherein the composition or medicament is for treating, preventing or delaying B cell immunosenescence.

25. The use according to any one of claims 2, 6 to 12, 17, 20, 21 or 24, wherein the composition or medicament is for the therapy of a cardiovascular disease; a neurodegenerative disease, such as Alzheimer's disease or Parkinson's disease; a cancer; type 2 diabetes; or an autoimmune disease; associated with immunosenescence.

26. The use according to any one of claims 3, 6 to 12, 17, 20 or 21, wherein the composition or medicament is for the therapy of a cancer by enhancing CAR-T.

27. The use of claim 26, wherein the cancer is chronic lymphocytic leukaemia.