CLAIMS

1. A pharmaceutical composition that comprises an amount of a bacteria strain of the species *Enterococcus faecium*; wherein said *Enterococcus faecium* is the sole species present in the pharmaceutical composition in an amount that is greater than $1x10^6$ CFU/g with respect to a total weight of the pharmaceutical composition;

wherein the *Enterococcus faecium* bacteria strain is live and lyophilized; and wherein the *Enterococcus faecium* bacteria strain has an enzyme profile as determined by a Rapid ID 32A analysis that is:

(i) positive for at least one of: arginine dihydrolase, β-glucosidase, mannose fermentation, glutamic acid decarboxylase, arginine arylamidase, phenylalanine arylamidase, leucine arylamidase, pyroglutamic acid arylamidase, tyrosine arylamidase, glycine arylamidase, histidine arylamidase and serine arylamidase; and

(ii) intermediate for N-acetyl-β-glucosaminidase.

2. The pharmaceutical composition of claim 1, further comprising a pharmaceutically acceptable excipient, diluent, or carrier.

3. The pharmaceutical composition of claims 1 or 2, wherein the *Enterococcus faecium* bacteria strain comprises a polynucleotide sequence that is a 16s rRNA gene sequence with at least 95% sequence identity to the polynucleotide of SEQ ID NO:2 as determined by the Smith-Waterman homology search algorithm using an affine gap search with a gap open penalty of 12 and a gap extension penalty of 2, and a BLOSUM matrix of 62.

4. The pharmaceutical composition of claims 1-3, wherein the *Enterococcus faecium* bacteria strain comprises a polynucleotide sequence that is the 16s rRNA gene sequence of SEQ ID NO:2.

5. The pharmaceutical composition of claims 1-4, wherein said *Enterococcus faecium* bacterial strain is the *Enterococcus faecium* bacteria strain deposited under accession number NCIMB 42487.

6. The pharmaceutical composition of claims 1-5, wherein the amount is sufficient to decrease production of at least one cytokine when administered to a subject, wherein the at least one cytokine comprises an IL-17 cytokine selected from the group consisting of: IL-17A, IL-17B, IL-17C, IL-17D, IL-17E, and IL-17F.

7. The pharmaceutical composition of claims 1-6, wherein the amount is effective to treat a condition mediated by an increase in at least one cytokine when administered to a subject.

8. The pharmaceutical composition of claims 1-7, wherein at least 50% of the *Enterococcus faecium*

bacteria strain as measured by an amount of colony forming units (CFU), remains viable after about 1 year of storage when the pharmaceutical composition is stored in a closed container at 25°C at 95% relative humidity.

9. The pharmaceutical composition of claims 1-8, wherein the amount comprises from about $1x10^6$ to about $1x10^{11}$ CFU/g of said *Enterococcus faecium* bacteria strain with respect to a total weight of the pharmaceutical composition.

10. The pharmaceutical composition of claims 1-9, wherein the pharmaceutical composition is formulated for oral delivery.

11. The pharmaceutical composition of claim 10, further comprising an enteric coating.

12. The pharmaceutical composition of claims 1-11, further comprising a prebiotic compound selected from the group consisting of: a fructo-oligosaccharide, a short-chain fructo-oligosaccharide, inulin, an isomalt-oligosaccharide, a galacto-oligosaccharide, a pectin, a xylo-oligosaccharide, a chitosan-oligosaccharide, a β-glucan, an arable gum modified starch, a polydextrose, a D-tagatose, an acacia fiber, carob, an oat, and a citrus fiber.

13. The pharmaceutical composition of claims 1-12, wherein the amount comprises from about $1x10^8$ to about $1x10^{11}$ CFU/g of said *Enterococcus faecium* bacteria strain with respect to a total weight of the pharmaceutical composition.

14. The pharmaceutical composition of claims 1-13, wherein the amount comprises from about $1x10^7$ to about $1x10^{10}$ CFU/g of said *Enterococcus faecium* bacteria strain with respect to a total weight of the pharmaceutical composition.

15. The pharmaceutical composition of claims 1-14, wherein the pharmaceutical composition is encapsulated.

16. The pharmaceutical composition of claims 1-14, in the form of a table, capsule, or powder.

17. The pharmaceutical composition of claims 1-16, wherein the enzyme profile is positive for arginine dihydrolase and phenylalanine arylamidase.

18. The pharmaceutical composition of claim 1-16, wherein the enzyme profile is positive for pyroglutamic acid arylamidase and histidine arylamidase.

19. The pharmaceutical composition of claim 1-18, wherein the *Enterococcus faecium* bacteria strain comprises a polynucleotide sequence that is a 16s rRNA gene sequence with at least 99% sequence identity to the polynucleotide of SEQ ID NO:2 as determined by the Smith-Waterman homology search algorithm using an affine gap search with a gap open penalty of 12 and a gap extension penalty of 2, and a BLOSUM matrix of 62.

20. A pharmaceutical composition that comprises an amount of a bacteria strain of the species *Enterococcus faecium*; wherein the *Enterococcus faecium* bacteria strain is the sole bacteria strain present in the pharmaceutical composition in an amount that is greater than $1x10^8$ CFU/g with respect to a total weight of the pharmaceutical composition;

wherein the *Enterococcus faecium* bacteria strain is live and lyophilized; and wherein the *Enterococcus faecium* bacteria strain has an enzyme profile as determined by a Rapid ID 32A analysis that is:

(i) positive for at least one of: arginine dihydrolase, β-glucosidase, mannose fermentation, glutamic acid decarboxylase, arginine arylamidase, phenylalanine arylamidase, leucine arylamidase, pyroglutamic acid arylamidase, tyrosine arylamidase, glycine arylamidase, histidine arylamidase and serine arylamidase; and

(ii) intermediate for N-acetyl-β-glucosaminidase.

21. Use of the pharmaceutical composition of any preceding claim that comprises an amount of a bacteria strain of the species *Enterococcus faecium* in the manufacture of a medicament for reducing inflammation associated with Th17 differentiation in a subject with a condition mediated by the Th17 pathway, wherein the composition is to be administered orally to the subject;

wherein said bacteria strain is live and lyophilized; and wherein said bacteria strain has an enzyme profile as determined by a Rapid ID 32A analysis that is:

(i) positive for at least one of: arginine dihydrolase, β-glucosidase, mannose fermentation, glutamic acid decarboxylase, arginine arylamidase, phenylalanine arylamidase, leucine arylamidase, pyroglutamic acid arylamidase, tyrosine arylamidase, glycine arylamidase, histidine arylamidase and serine arylamidase; and

(ii) intermediate for N-acetyl-β-glucosaminidase;

wherein said pharmaceutical composition does not comprise *Bacillus subtilis* or *Bacillus coagulans*; and wherein administration of said medicament reduces inflammation associated with Th17 differentiation.

22. The use according to claim 21, wherein said medicament decreases an amount of IL-17A, IL-17B, IL-17C, IL-17D, IL-17E, or IL-17F; relative to an amount prior to administration.

23. The use according to claim 21 or claim 22, wherein the condition comprises uveitis; multiple

sclerosis; arthritis; neuromyelitis optica; psoriasis; systemic lupus erythematosus; inflammatory bowel disease; celiac disease; asthma; allergic asthma; neutrophilic asthma; chronic obstructive pulmonary disease (COPD); scleritis; vasculitis; Behcet's disease; atherosclerosis; atopic dermatitis; emphysema; periodontitis; allergic rhinitis; or allograft rejection.

24. The use according to any one of claims 21-23, wherein the condition is arthritis, and wherein the arthritis is rheumatoid arthritis, osteoarthritis, psoriatic arthritis, spondyloarthritis, ankylosing spondylitis, or juvenile idiopathic arthritis.

25. The use according to any one of claims 21-23, wherein the condition is inflammatory bowel disease, and wherein the inflammatory bowel disease is Crohn's disease or ulcerative colitis.

26. The use according to any one of claims 21-25, wherein the bacteria strain comprises a polynucleotide sequence that is the 16s rRNA gene sequence of SEQ ID NO:2.

27. The use according to any one of claims 21-26, wherein the subject has the condition, or has been identified as being at risk of the condition.

28. The use according to any one of claims 21-27, wherein the subject has previously received an anti-TNF-α-therapy.

29. The use according to any one of claims 21-28, wherein an additional therapeutic agent is to be administered to the subject.

30. The use according to any one of claims 21-29, wherein one or more doses of 1 g, 3 g, 5 g or 10 g of said pharmaceutical composition is to be administered.

31. The use according to any one of claims 21-23, wherein the condition is uveitis.

32. The use according to any one of claims 21-23, wherein the condition is asthma.

33. Use of a pharmaceutical composition in the manufacture of a medicament for reducing inflammation associated with Th17 differentiation in a subject with a condition mediated by the Th17 pathway, wherein the pharmaceutical composition is to be administered orally to the subject; wherein said pharmaceutical composition consists essentially of an amount of a bacteria strain of the species *Enterococcus faecium*; wherein said bacteria strain is live and lyophilized; wherein administration of said medicament reduces inflammation associated with Th17 differentiation in uveitis, arthritis, or asthma.

34. The use according to claim 21 or claim 33, wherein the bacteria strain comprises a polynucleotide sequence that is a 16s rRNA gene sequence with at least 95% homology to the polynucleotide of SEQ ID NO:2 as determined by the Smith-Waterman homology search algorithm using an affine gap search with a gap open penalty of 12 and a gap extension penalty of 2, and a BLOSUM matrix of 62.

35. The use according to any one of claims 21-34, wherein said bacteria strain is the bacteria strain of the species *Enterococcus faecium* deposited under accession number NCIMB 42487.

36. The use according to any one of claims 21-35, wherein said pharmaceutical composition comprises from about $1x10^6$ to about $1x10^{11}$ CFU/g of said bacteria strain with respect to a total weight of the pharmaceutical composition.

37. The pharmaceutical composition according to any one of claims 1-20 for use in therapy.