Claims

1. Vaccine for use in humans comprising as an active ingredient a recombinant Mycobacterium which is urease-deficient and which comprises a recombinant nucleic acid molecule encoding a fusion polypeptide comprising (a) a Mycobacterium antigen or an immunogenic fragment thereof, and (b) a phagolysomal escape domain.

2. The vaccine of claim 1, wherein the recombinant Mycobacterium cell is a recombinant Mycobacterium bovis (BCG) cell, particularly a recombinant M.bovis cell from strain Danish subtype Prague.

3. The vaccine of claim 1 or 2, wherein the Mycobacterium antigen is Ag85B.

4. The vaccine of any one of claims 1-3, wherein the recombinant Mycobacterium cell carries an antibiotic resistance gene, e.g. a hygromycin resistance gene.

5. The vaccine of any one of claims 1-3, wherein the recombinant Mycobacterium cell does not carry an antibiotic resistance gene.

6. The vaccine of any one of claims 1-3, which is rBCG ΔUrec :: Hly^+ :: Hyg^+ (VPM1002).

7. The vaccine of any one of claims 1-6, which is for administration to a Mycobacterium-naïve subject, e.g. a newborn.

8. The vaccine of any one of claims 1-6, which is for administration to a Mycobacterium-pre-exposed subject.

9. The vaccine of any one of claims 1-8, which is a lyophylisate optionally together with a reconstruction fluid.

10. The vaccine of any one of claims 1-9, which comprises a dose of about 10^3-10^4 CFU, about 10^4-10^5 CFU or about 10^5-10^6 CFU.

11. The vaccine of any one of claims 1-10 for intradermal administration.

12. The vaccine of any one of claims 1-11 for administration in a single dose or doses.

13. The vaccine of any one of claims 1-12 for the upregulation of multifunctional $CD4^+$ T cells.

14. The vaccine of any one of claims 1-13 for use against tuberculosis.

15. A method for vaccinating a human subject, comprising administering a pharmaceutically effective dose of a recombinant Mycobacterium which is urease-deficient and which comprises a recombinant nucleic acid molecule encoding a fusion polypeptide comprising (a) a Mycobacterium antigen or an immunogenic fragment thereof, and (b) a phagolysomal escape domain.

Claims

1. Vaccine against tuberculosis for use in humans comprising as an active ingredient a recombinant Mycobacterium which is urease-deficient and which comprises a recombinant nucleic acid molecule encoding a fusion polypeptide comprising (a) a Mycobacterium antigen comprising a peptide sequence encoded by nucleotides 121-153 SEQ ID NO:1, wherein said Mycobacterium antigen is Ag85B, or an immunogenic fragment thereof, and (b) a phagolysomal escape domain comprising a peptide sequence encoded by nucleotides 211-1722 SEQ ID NO:1 and wherein the recombinant Mycobacterium cell is a recombinant Mycobacterium bovis cell from strain Danish subtype Prague, which does not carry an antibiotic resistance gene.

2. The vaccine of claim 1, which is for administration to a Mycobacterium-naive subject, e.g. a newborn.

3. The vaccine of claim 1, which is for administration to a Mycobacterium-pre-exposed subject.

4. The vaccine of any one of claims 1-3, which is a lyophylisate optionally together with a reconstruction fluid.

5. The vaccine of any one of claims 1-4, which comprises a dose of about 10^3-10^4 CFU, about 10^4-10^5 CFU or about 10^5-10^6 CFU.

6. The vaccine of any one of claims 1-5 for intradermal administration.

7. The vaccine of any one of claims 1-6 for administration in a single dose or doses.

8. The vaccine of anyone of claims 1-7 for the upregulation of multifunctional $CD4^+$ T cells.

9. Use of a pharmaceutically effective dose of a recombinant Mycobacterium cell which is urease-deficient and does not carry an antibiotic resistance gene and which comprises a recombinant nucleic acid molecule encoding a fusion polypeptide comprising (a) a Mycobacterium antigen comprising a peptide sequence encoded by nucleotides 121-153 SEQ ID NO:1, wherein said Mycobacterium antigen is Ag85B, or an immunogenic fragment thereof, and (b) a phagolysomal escape domain comprising a peptide sequence encoded by nucleotides 211-1722 SEQ ID NO:1 and wherein the recombinant Mycobacterium cell is a recombinant Mycobacterium bovis cell from strain Danish subtype Prague in the manufacture of a medicament for the treatment of tuberculosis.