CLAIMS

1. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one antigen capable of eliciting an immune response.
2. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to a binding domain capable of binding at least one antigen capable of eliciting an immune response in a subject.
3. A method of immunising a subject against a pathogen, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one antigen capable of eliciting an immune response.
4. A method of immunising a subject against a pathogen, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to a binding domain capable of binding at least one antigen capable of eliciting an immune response in a subject.
5. The method of any one of claims 1 to 4 wherein the immune response comprises a cell-mediated immune response.
6. The method of any one of claims 1 to 5 wherein the immune response comprises a humoral response.
7. The method of any one of claims 1 to 6, wherein the subject is infected with a pathogen or has been immunised against a pathogen.
8. The method of any one of claims 2 or 4 to 7, wherein the binding domain capable of binding an antigen capable of eliciting an immune response binds to an endogenous antigen.
9. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one antigen capable of eliciting an immune response.

10. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding an antigen capable of eliciting an immune response.
11. The polymer particle of claim 9 or claim 10 wherein the antigen is capable of eliciting a cell-mediated immune response.
12. The polymer particle of any one of claims 9 to 11 wherein the antigen is capable of eliciting a humoral immune response.
13. The polymer particle of any one of claims 9 to 12 wherein the polymer particle comprises two or more different fusion polypeptides.
14. The polymer particle of any one of claims 9 to 13 wherein the polymer particle comprises two or more different antigens, or two or more different binding domains capable of binding an antigen.
15. The polymer particle of any one of claims 9 to 14 wherein the polymer particle comprises at least one antigen capable of eliciting an immune response and at least one binding domain capable of binding an antigen capable of eliciting a cell-mediated immune response.
16. The polymer particle of any one of claims 9 to 15 wherein the polymer particle further comprises at least one substance bound to or incorporated into the polymer particle.
17. The polymer particle of claim 16 wherein the substance is an antigen, adjuvant or immunostimulatory molecule, or a combination of any two or more thereof.
18. The polymer particle of any one of claims 9 to 17 wherein the polymer particle is multi-valent.
19. The polymer particle of any one of claims 16 to 18 wherein the substance is bound to the polymer particle by cross-linking.
20. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one antigen capable of eliciting an immune response for eliciting an immune response in a subject in need thereof, or for immunising a subject against a pathogen, or for diagnosing infection from a pathogen in a subject in need thereof.
21. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding an antigen capable of eliciting an immune response for eliciting an immune response in a subject in need thereof, or for immunising a subject against a pathogen, or for diagnosing infection from a pathogen in a subject in need thereof.

22. The polymer particle of any one of claims wherein the antigen is an antigen from an organism selected from the group consisting of Mycobacterium (e.g. M. bovis, M. tuberculosis, M. leprae, M. kansasii, M. avium, M. avium paratuberculosis, Mycobacterium sp.), Listeria (e.g. L. monocytogenes, Listeria sp.), Salmonella (e.g. S. typhi), Yersinia (e.g Y. pestis, Y. enterocolitica, Y. pseudotuberculosis), Bacillus anthracis, Legionella (e.g. L. pneumophila, L. longbeachae, L. bozemanii, Legionella sp.), Rickettsia (e.g. R. rickettsii, R. akari, R. conorii, R. siberica, R. australis, R. japonica, R. africae, R. prowazekii, R. typhi, Rickettsia sp.), Chlamydia (e.g. C. pneumoniae, C. trachomatis, Chlamydia sp.), Clamydophila (e.g. C. psittaci, C. abortus), Streptococcus (e.g. S. pneumoniae, S. pyogenes, S. agalactiae), Staphylococcus (S. aureus) including Methicillin resistant Staphylococcus aureus (MRSA), Ehrlichia (e.g. E. chaffeensis, Ehrlichia phagocytophila geno group, Ehrlichia sp.), Coxiella burnetii, Leishmania sp., Toxpolasma gondii, Trypanosoma cruzi, Histoplasma sp., Francisella tularensis, and viruses including Hepatitis C, Adenoviruses, Picornaviruses including coxsackievirus, hepatitis A virus, poliovirus, Herpesviruses including epstein-barr virus, herpes simplex type 1, herpes simplex type 2, human cytomegalovirus, human herpesvirus type 8, varicella-zoster virus, Hepadnaviruses including hepatitis B virus, Flaviviruses including hepatitis C virus, yellow fever virus, dengue virus, West Nile virus, Retroviruses including human immunodeficiency virus (HIV), Orthomyxoviruses including influenza virus, Paramyxoviruses including measles virus, mumps virus, parainfluenza virus, respiratory syncytial virus, Papillomaviruses including papillomavirus, Rhabdoviruses including rabies virus, Togaviruses including Rubella virus, and other viruses including vaccinia, avipox, adeno-associated virus, modified Vaccinia Strain Ankara, Semliki Forest virus, poxvirus, and coronaviruses, or at least one antigenic portion or T-cell epitope of any of the above mentioned antigens.
23. The method according to any one of claims 1 to 8 wherein the at least one polymer particle is a polymer particle according to any one of claims 9 to 22.
24. A composition comprising the polymer particle of any one of claims 9 to 22.
25. The composition of claim 25 for for eliciting an immune response in a subject in need thereof, or for vaccinating a subject in need thereof, or for immunising a subject in need thereof against a pathogen, or for diagnosing infection from a pathogen in a subject in need thereof.
26. The composition of claim 25 or claim 26 wherein the composition is a vaccine.

27. Use of a polymer particle of any one of claims 9 to 22 in the manufacture of a medicament suitable for eliciting an immune response in a subject in need thereof, or for vaccinating a subject in need thereof, or for immunising a subject in need thereof against a pathogen, or for diagnosing infection from a pathogen in a subject in need thereof.
28. The use according to claim 27 wherein the medicament is a vaccine.
29. An expression construct, the expression construct comprising

    at least one nucleic acid sequence encoding a particle-forming protein; and

    at least one nucleic acid sequence encoding an antigen capable of eliciting an immune response or at least one nucleic acid sequence encoding a binding domain capable of binding an antigen capable of eliciting an immune response.
30. The expression construct of claim 29, wherein the at least one nucleic acid sequence encoding the particle-forming protein and the at least one nucleic acid sequence encoding the antigen capable of eliciting an immune response or the at least one nucleic acid sequence encoding the binding domain capable of binding an antigen capable of eliciting an immune response are present as a single open reading frame.
31. The expression construct of claim 29 or 30, wherein the expression construct encodes a fusion polypeptide comprising the particle-forming protein and the antigen capable of eliciting an immune response or the binding domain capable of binding an antigen capable of eliciting an immune response.
32. The expression construct of any one of claims 29 to 31, wherein the construct additionally comprises a nucleic acid encoding
    i. at least one thiolase, or
    ii. at least one reductase, or
    iii. both (i) and (ii).
33. The expression construct of any one of claims 29 to 32, wherein the construct comprises a nucleic acid encoding
    i. at least one thiolase, or
    ii. at least one reductase, or
    iii. at least one polymer synthase, or
    iv. at least one antigen capable of eliciting an immune response, or
    v. at least one binding domain capable of binding at least one antigen capable of eliciting an immune response, or
    vi. a fusion protein comprising one or more of i) to v) above, or
    vii. any combination of i) to vi) above.

34. The expression construct of any one of claims 29 to 33 wherein the antigen is an antigen capable of eliciting a cell-mediated immune response.

35. A method for producing polymer particles, the method comprising

providing a host cell comprising at least one expression construct, the at least one expression construct comprising at least one nucleic acid sequence encoding an antigen capable of eliciting an immune response, or at least one nucleic acid sequence encoding a binding domain capable of binding an antigen capable of eliciting an immune response, and maintaining the host cell under conditions suitable for expression of the expression construct, and separating the polymer particles from the host cells.

36. A method of diagnosing infection from a pathogen, wherein the method comprises administering to a subject at least one polymer particle of any one of claims 9 to 22 and detecting a response indicative of the presence of the pathogen.

37. The method of claim 36 wherein the response indicative of the presence of the pathogen is a delayed-type hypersensitivity response.

38. The method of claim 36 wherein the response indicative of the presence of the pathogen is a detecting the presence of an antibody to the pathogen in a sample obtained from the subject.

39. The method of claim 36 wherein the response indicative of the presence of the pathogen is a detecting the presence of an immune cell responsive to the pathogen in said sample.

40. A method for producing polymer particles, the method comprising

providing a host cell comprising at least one expression construct, the at least one expression construct comprising

at least one nucleic acid sequence encoding a particle-forming protein and

at least one nucleic acid sequence encoding a *M. tuberculosis* antigen or a *M. tuberculosis* antigen binding domain,

maintaining the host cell under conditions suitable for expression of the expression construct, and

separating the polymer particles from the host cells.

41. The method of claim 40, wherein the expression construct is in a high copy number vector.

42. The method of claim 40 wherein the at least one nucleic acid sequence encoding a particle-forming protein is operably linked to a strong promoter.

43. A method of claim 40, wherein the host cell is maintained in the presence of a substrate of the polymer synthase or a substrate mixture, including monomeric substrate, or a precursor

substrate able to be metabolised by the host cell to form a substrate of the polymer synthase.

44. The method of claim 40, wherein the host cell comprises at least two different expression constructs selected from the group comprising

an expression construct comprising a nucleic acid sequence encoding a particle-forming protein and at least one *M. tuberculosis* antigen, or

an expression construct comprising a nucleic acid sequence encoding a particle-forming protein and at least one *M. tuberculosis* antigen binding domain, or

an expression construct comprising a nucleic acid sequence encoding an adjuvant, or

an expression construct comprising a nucleic acid sequence encoding at least one *M. tuberculosis* antigen.

45. The method of claim 40 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes ESAT-6.

46. The method of claim 40 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes Ag85A.

47. The method of claim 40 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes ESAT-6 and Ag85A.

48. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one *M. tuberculosis* antigen.

49. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one *M. tuberculosis* antigen binding domain.

50. The polymer particle of claim 48 or claim 49 wherein the polymer particle comprises two or more different fusion polypeptides.

51. The polymer particle of claim 50 wherein the polymer particle comprises two or more different *M. tuberculosis* antigens, or two or more different *M. tuberculosis* antigen binding domains.

52. The polymer particle of claim 50 or claim 51 wherein the polymer particle comprises at least one *M. tuberculosis* antigen and at least one *M. tuberculosis* antigen binding domain.

53. The polymer particle of any one of claims 48 to 52, wherein the polymer particle further comprises at least one substance bound to or incorporated into the polymer particle, or a combination thereof.

54. The polymer particle of claim 53 wherein the substance is an antigen, adjuvant or immunostimulatory molecule.

55. The polymer particle of any one of claims 48 to 54 wherein the polymer particle is multi-valent.
56. The polymer particle of any one of claims 53 to 55 wherein the substance is bound to the polymer particle by cross-linking.
57. The polymer particle of any one of claims 48 to 56 comprising *M. tuberculosis* ESAT-6 antigen.
58. The polymer particle of any one of claims 48 to 57 comprising *M. tuberculosis* Ag85A antigen.
59. The polymer particle of claim 58 wherein at least one of the fusion polypeptides comprises ESAT-6 antigen and Ag85A antigen.
60. An expression construct, the expression construct comprising

    at least one nucleic acid sequence encoding a particle-forming protein; and

    at least one nucleic acid sequence encoding a *M. tuberculosis* antigen or at least one nucleic acid sequence encoding a *M. tuberculosis* antigen binding domain.
61. The expression construct of claim 60, wherein the at least one nucleic acid sequence encoding the particle-forming protein and the at least one nucleic acid sequence encoding the *M. tuberculosis* antigen or the at least one nucleic acid sequence encoding the *M. tuberculosis* antigen binding domain are present as a single open reading frame.
62. The expression construct of claim 60 or 61, wherein the expression construct encodes a fusion polypeptide comprising the particle-forming protein and the *M. tuberculosis* antigen or the *M. tuberculosis* antigen binding domain.
63. The expression construct of any one of claims 60 to 62, wherein the construct additionally comprises a nucleic acid encoding

    i. at least one thiolase, or
    ii. at least one reductase, or
    iii. both (i) and (ii).
64. The expression construct of any one of claims 60 to 63, wherein the construct comprises a nucleic acid encoding

    i. at least one thiolase, or
    ii. at least one reductase, or
    iii. at least one polymer synthase, or
    iv. at least one antigen capable of eliciting a cell-mediated immune response, or

v. at least one binding domain capable of binding at least one antigen capable of eliciting a cell-mediated immune response, or

vi. a fusion protein comprising one or more of i) to v) above, or

vii. any combination of i) to vi) above.

65. A method of immunising a subject against tuberculosis, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one *M. tuberculosis* antigen.

66. A method of immunising a subject against tuberculosis, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one *M. tuberculosis* antigen binding domain.

67. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one *M. tuberculosis* antigen.

68. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein fused to at least one *M. tuberculosis* antigen binding domain.

69. The method of any one of claims 65 to 68, wherein the subject is infected with tuberculosis.

70. The method of any one of claims 65 to 69, wherein the subject has been immunised against tuberculosis.

71. The method of any one of claims 66 or 68 to 70, wherein the *M. tuberculosis* antigen binding domain binds to an endogenous *M. tuberculosis* antigen.

72. The method of any one of claims 65 to 71, wherein at least one of the polymer particles comprises two or more different fusion polypeptides.

73. The method of any one of claims 65 to 72, wherein at least one of the polymer particles comprises two or more different *M. tuberculosis* antigens, or two or more different *M. tuberculosis* antigen binding domains.

74. The method of any one of claims 65 to 73, wherein at least one of the polymer particles comprises at least one *M. tuberculosis* antigen and at least one *M. tuberculosis* antigen binding domain.

75. The method of any one of claims 65 to 74, wherein at least one of the polymer particles further comprises at least one substance bound to or incorporated into the polymer particle, or a combination thereof.

76. The method of claim 75, wherein the substance is an antigen, adjuvant or immunostimulatory molecule.

77. The method of any one of claims 65 to 74, wherein at least one of the polymer particles is multi-valent.

78. The method of any one of claims 75 to 77, wherein the substance is bound to the polymer particle by cross-linking.

79. The method of any one of claims 65 to 78, wherein at least one of the polymer particles comprises *M. tuberculosis* ESAT-6 antigen.

80. The method of any one of claims 65 to 79, wherein at least one of the polymer particles comprises *M. tuberculosis* Ag85A antigen.

81. The method of any one of claims 65 to 80, wherein at least one of the polymer particles comprises at least one of the fusion polypeptide comprising ESAT-6 antigen and Ag85A antigen.

82. The method of any one of claims 65 to 81, wherein at least one of the polymer particles comprises an *M. tuberculosis* antigen selected from the group comprising Ag85B (MPT59), Ag85B, Ag85C, MPT32, MPT51, MPT59, MPT63, MPT64, MPT83, MPB5, MPB59, MPB64, MTC28, Mtb2, Mtb8.4, Mtb9.9, Mtb32A, Mtb39, Mtb41, TB10.4, TB10C, TB11B, TB12.5, TB13A, TB14, TB15, TB15A, TB16, TB16A, TB17, TB18, TB21, TB20.6, TB24, TB27B, TB32, TB32A, TB33, TB38, TB40.8, TB51, TB54, TB64, CFP6, CFP7, CFP7A, CFP7B, CFP8A, CFP8B, CFP9, CFP10, CFP11, CFP16, CFP17, CFP19, CFP19A, CFP19B, CFP20, CFP21, CFP22, CFP22A, CFP23, CFP23A, CFP23B, CFP25, CFP25A, CFP27, CFP28, CFP28B, CFP29, CFP30A, CFP30B, CFP50, CWP32, hspX (alpha-crystalline), APA, Tuberculin purified protein derivative (PPD), ST-CF, PPE68, LppX, PstS-1, PstS-2, PstS-3, HBHA, GroEL, GroEL2, GrpES, LHP, 19kDa lipoprotein, 71kDa, RD1-ORF2, RD1-ORF3, RD1-ORF4, RD1-ORF5, RD1-ORF8, RD1-ORF9A, RD1-ORF9B, Rv1984c, Rv0577, Rv1827, BfrB, Tpx. Rv1352, Rv1810, PpiA, Cut2, FbpB, FbpA, FbpC, DnaK, FecB, Ssb, RplL, FixA, FixB, AhpC2, Rv2626c, Rv1211, Mdh, Rv1626, Adk, ClpP, SucD (Belisle et al, 2005; US 7,037,510; US 2004/0057963; US 2008/0199493; US 2008/0267990), or at least one antigenic portion or T-cell epitope of any of the above mentioned antigens

83. A method of immunising a subject against hepatitis or influenza, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein, preferably a polymer synthase, fused to at least one hepatitis antigen or at least one influenza antigen.

84. A method of immunising a subject against hepatitis or influenza, wherein the method comprises administering to a subject in need thereof at least one polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein, preferably a polymer synthase, fused to a binding domain capable of binding to at least one hepatitis antigen or at least one influenza antigen.

85. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein, preferably a polymer synthase, fused to at least one hepatitis antigen or at least one influenza antigen.

86. A method of eliciting an immune response in a subject, wherein the method comprises administering to a subject in need thereof a polymer particle comprising one or more fusion polypeptides, wherein at least one of the fusion polypeptides comprises a particle-forming protein, preferably a polymer synthase, fused to a binding domain capable of binding at least one hepatitis antigen or at least one influenza antigen.

87. The method of any one of claims 83 to 86 wherein the immune response is a cell-mediated immune response.

88. A method of diagnosing infection from hepatitis or influenza, wherein the method comprises administering to a subject at least one polymer particle of any one of claims 9 to 22 and detecting a response indicative of the presence of the hepatitis or influenza virus.

89. The method of claim 88 wherein the response indicative of the presence of the hepatitis or influenza virus is a delayed-type hypersensitivity response.

90. The method of claim 88 wherein the response indicative of the presence of the hepatitis or influenza virus is a detecting the presence of an antibody to the hepatitis antigen or influenza antigen in said sample.

91. The method of claim 88 wherein the response indicative of the presence of the hepatitis or influenza virus is a detecting the presence of an immune cell responsive to the hepatitis or influenza virus in said sample.

92. The method of any one of claims 88 to 91, wherein the subject is infected with a hepatitis or influenza.
93. The method of any one of claims 88 to 92, wherein the subject has been immunised against hepatitis or influenza.
94. The method of any one of claims 89 or 91 to 93, wherein the binding domain capable of binding a hepatitis antigen or an influenza antigen binds to an endogenous hepatitis antigen or influenza antigen.
95. The method of any one of claims 88 to 94, wherein at least one of the polymer particles comprises two or more different fusion polypeptides.
96. The method of any one of claims 88 to 95, wherein at least one of the polymer particles comprises two or more different hepatitis antigens or two or more influenza antigens, or two or more different binding domains capable of binding a hepatitis antigen or an influenza antigen.
97. The method of any one of claims 88 to 96, wherein at least one of the polymer particles comprises at least one hepatitis antigen or at least one influenza antigen and at least one binding domain capable of binding a hepatitis antigen or an influenza antigen.
98. The method of any one of claims 88 to 97, wherein at least one of the polymer particles further comprises at least one substance bound to or incorporated into the polymer particle, or a combination thereof.
99. The method of claim 98, wherein the substance is an antigen, adjuvant or immunostimulatory molecule.
100. The method of any one of claims 88 to 99, wherein at least one of the polymer particles is multi-valent.
101. The method of any one of claims 98 to 100, wherein the substance is bound to the polymer particle by cross-linking.
102. The method of any one of claims 88 to 101, wherein at least one of the polymer particles comprises at least one antigen, or at least one binding domain capable of binding at least one antigen, wherein the antigen is from an organism selected from the group consisting of viruses including Hepatitis C, Adenoviruses, Picornaviruses including coxsackievirus, hepatitis A virus, poliovirus, Herpesviruses including epstein-barr virus, herpes simplex type 1, herpes simplex type 2, human cytomegalovirus, human herpesvirus type 8, varicella-zoster virus, Hepadnaviruses including hepatitis B virus, Flaviviruses including hepatitis C virus, Orthomyxoviruses including influenza virus, or at least one antigenic portion or T-cell epitope of any of the above mentioned antigens.

103. A method for producing polymer particles, the method comprising

providing a host cell comprising at least one expression construct, the at least one expression construct comprising

at least one nucleic acid sequence encoding a hepatitis antigen or an influenza antigen, or

at least one nucleic acid sequence encoding a binding domain capable of binding a hepatitis antigen or an influenza antigen,

maintaining the host cell under conditions suitable for expression of the expression construct, and

separating the polymer particles from the host cells.

104. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one hepatitis antigen or at least one influenza antigen.

105. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding a hepatitis antigen or an influenza antigen.

106. The polymer particle of claim 104 or claim 105 wherein the polymer particle comprises two or more different fusion polypeptides.

107. The polymer particle of claim 106 wherein the polymer particle comprises two or more different hepatitis antigens or two or more different influenza antigens, or two or more different binding domains capable of binding a hepatitis antigen or an influenza antigen.

108. The polymer particle of claim 106 or claim 107 wherein the polymer particle comprises at least one hepatitis antigen or at least one influenza antigen and at least one binding domain capable of binding a hepatitis antigen or an influenza antigen.

109. The polymer particle of any one of claims 104 to 108, wherein the polymer particle further comprises at least one substance bound to or incorporated into the polymer particle, or a combination thereof.

110. The polymer particle of claim 109 wherein the substance is an antigen, adjuvant or immunostimulatory molecule.

111. The polymer particle of any one of claims 104 to 110 wherein the polymer particle is multi-valent.

112. The polymer particle of any one of claims 109 to 111 wherein the substance is bound to the polymer particle by cross-linking.

113. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one hepatitis antigen or at least one influenza antigen for eliciting a cell-mediated immune response in a subject in need thereof, or for immunising a subject against hepatitis or influenza, or for diagnosing infection from hepatitis or influenza in a subject in need thereof.

114. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding a hepatitis antigen or an influenza antigen for eliciting a cell-mediated immune response in a subject in need thereof, or for immunising a subject against hepatitis or influenza, or for diagnosing infection from hepatitis or influenza in a subject in need thereof.

115. Use of a polymer particle of any one of claims 104 to 114 in the manufacture of a medicament suitable for eliciting a cell-mediated immune response in a subject in need thereof, or for immunising a subject against hepatitis or influenza, or for diagnosing infection from hepatitis or influenza in a subject in need thereof.

116. An expression construct, the expression construct comprising

    at least one nucleic acid sequence encoding a particle-forming protein; and

    at least one nucleic acid sequence encoding a hepatitis antigen or an influenza antigen or at least one nucleic acid sequence encoding a binding domain capable of binding a hepatitis antigen or an influenza antigen.

117. The expression construct of claim 116, wherein the at least one nucleic acid sequence encoding the particle-forming protein and the at least one nucleic acid sequence encoding the hepatitis antigen or the influenza antigen or the at least one nucleic acid sequence encoding the binding domain capable of binding a hepatitis antigen or an influenza antigen are present as a single open reading frame.

118. The expression construct of claim 116 or 117, wherein the expression construct encodes a fusion polypeptide comprising the particle-forming protein and the hepatitis antigen or the influenza antigen or the binding domain capable of binding a hepatitis antigen or an influenza antigen.

119. The expression construct of any one of claims 116 to 118, wherein the construct additionally comprises a nucleic acid encoding

    i. at least one thiolase, or
    ii. at least one reductase, or
    iii. both (i) and (ii).

120. The expression construct of any one of claims 116 to 119, wherein the construct comprises a nucleic acid encoding

i. at least one thiolase, or
ii. at least one reductase, or
iii. at least one polymer synthase, or
iv. at least one hepatitis antigen or at least one influenza antigen, or
v. at least one binding domain capable of binding at least one hepatitis antigen or at least one influenza antigen, or
vi. a fusion protein comprising one or more of i) to v) above, or
vii. any combination of i) to vi) above.

CLAIMS

1. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one antigen capable of eliciting an immune response, wherein the polymer particle comprises at least one antigen capable of eliciting an immune response and at least one binding domain capable of binding an antigen capable of eliciting a cell-mediated immune response.
2. A method for producing polymer particles, the method comprising
   providing a host cell comprising at least one expression construct, the at least one expression construct comprising
      at least one nucleic acid sequence encoding a particle-forming protein and at least one nucleic acid sequence encoding a *M. tuberculosis* antigen or a *M. tuberculosis* antigen binding domain,
   maintaining the host cell under conditions suitable for expression of the expression construct, and
   separating the polymer particles from the host cells.
3. The method of claim 2, wherein the expression construct is in a high copy number vector.
4. The method of claim 2 wherein the at least one nucleic acid sequence encoding a particle-forming protein is operably linked to a strong promoter.
5. A method of claim 2, wherein the host cell is maintained in the presence of a substrate of the polymer synthase or a substrate mixture, including monomeric substrate, or a precursor substrate able to be metabolised by the host cell to form a substrate of the polymer synthase.
6. The method of claim 2, wherein the host cell comprises at least two different expression constructs selected from the group comprising
      an expression construct comprising a nucleic acid sequence encoding a particle-forming protein and at least one *M. tuberculosis* antigen, or
      an expression construct comprising a nucleic acid sequence encoding a particle-forming protein and at least one *M. tuberculosis* antigen binding domain, or
      an expression construct comprising a nucleic acid sequence encoding an adjuvant, or
      an expression construct comprising a nucleic acid sequence encoding at least one *M. tuberculosis* antigen.

7. The method of claim 2 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes ESAT-6.
8. The method of claim 2 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes Ag85A.
9. The method of claim 2 wherein at least one nucleic acid sequence encoding a *M. tuberculosis* antigen encodes ESAT-6 and Ag85A.
10. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one *M. tuberculosis* antigen.
11. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one *M. tuberculosis* antigen binding domain.
12. The polymer particle of claim 10 or claim 11 wherein the polymer particle comprises two or more different fusion polypeptides.
13. The polymer particle of claim 12 wherein the polymer particle comprises two or more different *M. tuberculosis* antigens, or two or more different *M. tuberculosis* antigen binding domains.
14. The polymer particle of claim 12 or claim 13 wherein the polymer particle comprises at least one *M. tuberculosis* antigen and at least one *M. tuberculosis* antigen binding domain.
15. The polymer particle of any one of claims 10 to 14 wherein the polymer particle further comprises at least one substance bound to or incorporated into the polymer particle, or a combination thereof.
16. The polymer particle of claim 15 wherein the substance is an antigen, adjuvant or immunostimulatory molecule.
17. The polymer particle of any one of claims 10 to 16 wherein the polymer particle is multi-valent.
18. The polymer particle of any one of claims 15 to 17 wherein the substance is bound to the polymer particle by cross-linking.
19. The polymer particle of any one of claims 10 to 18 comprising *M. tuberculosis* ESAT-6 antigen.
20. The polymer particle of any one of claims 10 to 19 comprising *M. tuberculosis* Ag85A antigen.
21. The polymer particle of claim 20 wherein at least one of the fusion polypeptides comprises ESAT-6 antigen and Ag85A antigen.

22. An expression construct, the expression construct comprising

at least one nucleic acid sequence encoding a particle-forming protein; and

at least one nucleic acid sequence encoding a *M. tuberculosis* antigen or at least one nucleic acid sequence encoding a *M. tuberculosis* antigen binding domain.

23. The expression construct of claim 22, wherein the at least one nucleic acid sequence encoding the particle-forming protein and the at least one nucleic acid sequence encoding the *M. tuberculosis* antigen or the at least one nucleic acid sequence encoding the *M. tuberculosis* antigen binding domain are present as a single open reading frame.

24. The expression construct of claim 22 or 23, wherein the expression construct encodes a fusion polypeptide comprising the particle-forming protein and the *M. tuberculosis* antigen or the *M. tuberculosis* antigen binding domain.

25. The expression construct of any one of claims 22 to 24, wherein the construct additionally comprises a nucleic acid encoding

i. at least one thiolase, or
ii. at least one reductase, or
iii. both (i) and (ii).

26. The expression construct of any one of claims 22 to 25, wherein the construct comprises a nucleic acid encoding

i. at least one thiolase, or
ii. at least one reductase, or
iii. at least one polymer synthase, or
iv. at least one antigen capable of eliciting a cell-mediated immune response, or
v. at least one binding domain capable of binding at least one antigen capable of eliciting a cell-mediated immune response, or
vi. a fusion protein comprising one or more of i) to v) above, or
vii. any combination of i) to vi) above.

27. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding a hepatitis antigen or an influenza antigen.

28. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one hepatitis antigen or at least one influenza antigen, wherein the polymer particle comprises at least one hepatitis antigen or at least one influenza antigen and at least one binding domain capable of binding a hepatitis antigen or an influenza antigen.

29. A polymer particle comprising one or more fusion polypeptides comprising a particle-forming protein fused to at least one binding domain capable of binding a hepatitis antigen or an influenza antigen for eliciting a cell-mediated immune response in a subject in need thereof, or for immunising a subject against hepatitis or influenza, or for diagnosing infection from hepatitis or influenza in a subject in need thereof.