WHAT IS CLAIMED IS:

1. A composition for delivering a vaccine, comprising (i) a particle; and (ii) an exogenous biological material loaded within the particle, wherein the biological material comprises a protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, or a combination thereof.

2. The composition of claim 1, wherein the vaccine comprises an antigen that induces an immune response upon administration to a subject.

3. The composition of claim 2, wherein the antigen is selected from the group consisting of a protein, a peptide, an epitope, a nucleic acid, and an immunogenic fragment or a subunit thereof.

4. The composition of claim 1, wherein the vaccine is a live vaccine, a killed vaccine, or an attenuated vaccine.

5. The composition of claim 1, wherein the particle is a yeast cell wall particle.

6. The composition of claim 1, wherein the biological material loaded particle is further incubated with an isolated dendritic cell prior to administration.

7. The composition of claim 6, wherein the dendritic cell is an immature cell that has been isolated for no more than 8 days prior to incubation.

8. The composition of claim 1, further comprising one or more adjuvants, excipients, and preservatives.

9. A method for efficiently delivering a vaccine to a subject comprising administering a composition of claim 1.

10. The method of claim 9, wherein the composition of claim 1 without prior incubation with any dendritic cell is administered to the dermis of the subject.

11. A method for producing an incubated dendritic cell containing a vaccine loaded particle, comprising:

(i) loading a biological material into the particle to produce a biological material loaded particle;

(ii) freeze-drying the biological material loaded particle; and

(iii) incubating the biological material loaded particle with a dendritic cell,

wherein the biological material comprises a protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, or a combination thereof; and

wherein incubating the biological material loaded particle with the dendritic cell causes the dendritic cell to phagocytose the biological material loaded particle.

12. The method of claim 11, further comprising (a) resuspending the biological material loaded particle in solution and (b) freeze-drying the resuspended solution before step (iii).

13. The method of claim 11, wherein step (iii) comprises: (a) contacting the biological material loaded particle with the dendritic cell at a ratio of from about 1:1 to about 100:1, (b) incubating the biological material loaded particle with the dendritic cell; and (c) collecting the dendritic cell containing the loaded particle and washing the cell.

14. The method of claim 13, wherein the biological material loaded particle is incubated with the dendritic cell for less than one hour.

15. A method for treating an infectious disease, comprising administering the composition of claim 1 to a subject.

16. A method for treating cancer, comprising administering the composition of claim 6 to a subject.

17. The method of claim 16, wherein the cancer is selected from the group consisting of breast cancer, small cell lung cancer, non-small cell lung cancer, glioma, medulloblastoma, neuroblastoma, Wilms tumors, rhabdomyosarcoma, osteosarcoma, liver cancer, pancreatic cancer, melanoma, prostate cancer and ocular melanoma.

18. A composition comprising a yeast cell wall particle and silicate, wherein the yeast cell wall particle is modified by capping with the silicate.

19. The composition of claim 18, further comprising an exogenous biological material loaded within the yeast cell wall particle.

20. The composition of claim 19, further comprising one or more adjuvants.

21. The composition of claim 20, wherein the one or more adjuvants are loaded within the yeast cell wall particle.

22. The composition of claim 20, wherein the adjuvant is monophosphoryl lipid A or a CpG oligonucleotide.

23. The composition of claim 18, wherein the silicate comprises an organic moiety attached to each of the four oxygen compounds of an orthosilicate.

24. The composition of claim 18, wherein the silicate is tetraethylorthosilicate, tetramethylorthosilicate, tetrapropylorthosilicate, or tetrabutylorthosilicate.

25. The composition of claim 19, wherein the biological material is selected from the group consisting of a specific protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, and a combination thereof.

26. The composition of claim 19, further comprising excipients or preservatives.

27. A method for preparing a composition comprising a yeast cell wall particle and a silicate, comprising contacting the yeast cell wall particle with the silicate in the presence of ammonia such that the yeast cell wall particle is capped by the silicate.

28. The method of claim 27, wherein the silicate comprises an organic moiety attached to each of the four oxygen compounds of an orthosilicate.

29. The method of claim 27, wherein the silicate is tetraethylorthosilicate, tetramethylorthosilicate, tetrapropylorthosilicate, or tetrabutylorthosilicate.

30. A method for efficiently delivering a biological material to a subject comprising administering a composition of claim 19.

31. The method of claim 30, wherein the composition is directly administered to the dermis of the subject.

32. A method for producing a cell mixture containing a yeast cell wall particle loaded with a biological material and capped with a silicate, comprising:

(i) loading a biological material into a yeast cell wall particle to produce a loaded particle;

(ii) capping the loaded particle with a silicate;

(iii) freeze-drying the capped, loaded particle; and

(iv) incubating the capped, loaded particle with a cell of monocytic origin

wherein the incubation causes the cell of monocytic origin to phagocytose the capped, loaded particle.

33. The method of claim 32, wherein the cell of monocytic origin is a pre-dendritic cell, a dendritic cell, or a partially differentiated dendritic cell.

34. The method of claim 32, wherein the biological material is selected from the group consisting of a specific protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, and a combination thereof.

35. The method of claim 32, wherein step (i) comprises:

(a) suspending a yeast cell wall particle and a biological material in a diluent and incubating for a period of time to allow the biological material to be absorbed by the yeast cell wall particle; and

(b) freeze-drying the suspension to load the biological material within the yeast cell wall particle.

36. The method of claim 35, wherein steps (a) and (b) are repeated at least once.

37. The method of claim 32, wherein the biological material is selected from the group consisting of a specific protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, and a combination thereof.

38. The method of claim 32, wherein the silicate is tetraethylorthosilicate, tetramethylorthosilicate, tetrapropylorthosilicate, or tetrabutylorthosilicate.

39. The composition of claim 1, wherein the biological material is tumor lysate.

40. A method for treating cancer, comprising administering the composition of claim 39 to a subject.

41. The composition of claim 19, wherein the biological material is tumor lysate.

42. The composition of claim 19, wherein the biological material loaded yeast cell wall particle is further incubated with an dendritic cell prior to administration.

43. A method of treating cancer, comprising administering the composition of claim 41 to a subject.

44. A method of treating cancer, comprising administering the composition of claim 42 to a subject.

WHAT IS CLAIMED IS:

1. A composition for delivering a vaccine, comprising (i) a particle; and (ii) an exogenous biological material loaded within the particle, wherein the biological material comprises a protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, or a combination thereof.

2. The composition of claim 1, wherein the particle is a yeast cell wall particle.

3. The composition of claim 1, wherein the biological material is tumor lysate.

4. The composition of claim 2, wherein the biological material is loaded within the yeast cell wall particle.

5. The composition of claim 2, further comprises a silicate, wherein the yeast cell wall particle is modified by capping with the silicate.

6. The composition of claim 5, wherein the silicate comprises an organic moiety attached to each of the four oxygen compounds of an orthosilicate.

7. The composition of claim 5, wherein the silicate is selected from the group consisting of tetraethylorthosilicate, tetramethylorthosilicate, tetrapropylorthosilicate, and tetrabutylorthosilicate.

8. The composition of claim 1, wherein the biological material loaded particle is further incubated with an isolated dendritic cell prior to administration.

9. The composition of claim 1, further comprises one or more adjuvants, excipients, and preservatives.

10. The composition of claim 9, wherein the adjuvant is monophosphoryl lipid A or a CpG oligonucleotide.

11. A method for producing an incubated dendritic cell containing a vaccine loaded particle, comprising:

(i) loading a biological material into the particle to produce a biological material loaded particle;

(ii) freeze-drying the biological material loaded particle; and

(iii) incubating the biological material loaded particle with a dendritic cell,

wherein the biological material comprises a protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, or a combination thereof; and

wherein incubating the biological material loaded particle with the dendritic cell causes the dendritic cell to phagocytose the biological material loaded particle.

12. The method of claim 11, further comprising (a) resuspending the biological material loaded particle in solution and (b) freeze-drying the resuspended solution before step (iii).

13. The method of claim 11, wherein step (iii) comprises: (a) contacting the biological material loaded particle with the dendritic cell at a ratio of from about 1:1 to about 100:1, (b) incubating the biological material loaded particle with the dendritic cell; and (c) collecting the dendritic cell containing the loaded particle and washing the cell.

14. The composition of claim 1 for use in the treatment of an infectious disease.

15. The composition of claim 1 for use in the treatment of cancer.

16. The use of the composition of claim 1 in the manufacture of a medicament for the treatment of cancer wherein the cancer is selected from the group consisting of breast cancer, small cell lung cancer, non-small cell lung cancer, glioma, medulloblastoma, neuroblastoma,

Wilms tumors, rhabdomyosarcoma, osteosarcoma, liver cancer, pancreatic cancer, melanoma, prostate cancer and ocular melanoma.

17. A method for preparing a composition comprising a yeast cell wall particle and a silicate, comprising contacting the yeast cell wall particle with the silicate in the presence of ammonia such that the yeast cell wall particle is capped by the silicate.

18. A method for producing a cell mixture containing a yeast cell wall particle loaded with a biological material and capped with a silicate, comprising:

(i) loading a biological material into a yeast cell wall particle to produce a loaded particle;

(ii) capping the loaded particle with a silicate;

(iii) freeze-drying the capped, loaded particle; and

(iv) incubating the capped, loaded particle with a cell of monocytic origin

wherein the incubation causes the cell of monocytic origin to phagocytose the capped, loaded particle.

19. The method of claim 18, wherein step (i) comprises:

(a) suspending a yeast cell wall particle and a biological material in a diluent and incubating for a period of time to allow the biological material to be absorbed by the yeast cell wall particle; and

(b) freeze-drying the suspension to load the biological material within the yeast cell wall particle.

20. The method of claim 18, wherein steps (a) and (b) are repeated at least once.