CLAIMS

1. A composition for delivering a vaccine, comprising (i) a yeast cell wall particle; (ii) silicate; and (iii) an exogenous, antigenic biological material loaded within the yeast cell wall particle, wherein the yeast cell wall particle is modified by capping with the silicate, and wherein the biological material comprises an antigenic protein or a fragment thereof, nucleic acid, carbohydrate, tumor lysate, or a combination thereof.

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

3. The composition of claim 1, wherein the silicate comprises an organic moiety attached to each of the four oxygen compounds of an orthosilicate.

4. The composition of claim 1, wherein the silicate is selected from the group consisting of tetraethylorthosilicate, tetramethylorthosilicate, tetrapropylorthosilicate, and tetrabutylorthosilicate.

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

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

7. The composition of claim 6, wherein the adjuvant is monophosphoryl lipid A or a CpG oligonucleotide.

8. The composition of claim 1 for use in the treatment of cancer, wherein the biological material is a tumor associated antigen.

9. The composition of claim 1 for use in the treatment of cancer, wherein the biological material is a tumor associated antigen, and 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.

10. A method for preparing a composition of claim 1, 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.

11. A method for producing a cell mixture containing the composition of claim 1, 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.

12. The method of claim 11, 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.

13. The method of claim 11, wherein steps (a) and (b) are repeated at least once.