

37° C. in PBS or horse serum for more than 24 hours, label loss can be assessed by measuring the radioactivity of the supernatant solutions after centrifugation. This labelling method can therefore be useful for in vivo studies, by gamma-scintigraphy or by direct measurement of the radioactivity in the blood and/or different organs.

This invention has been described with reference to its preferred embodiments. Variations and modifications of the invention will be obvious to those skilled in the art from the foregoing detailed description of the invention. It is intended that all of these variations and modifications be included within the scope of the appended claims.

We claim:

1. Multiblock copolymers comprising a multifunctional compound covalently linked to at least three polymer blocks, wherein the polymer blocks comprise one or more hydrophilic polymers and one or more hydrophobic bioerodible polymers.

2. The multiblock copolymer of claim 1 wherein the multifunctional compound is selected from the group consisting of dextrans, pentaerythritol, glucaronic acid, tartaric acid, mucic acid, citric acid, benzene tricarboxylic acid, benzene tetracarboxylic acid and butane diglycidyl ether.

3. The multiblock copolymer of claim 1 wherein the hydrophilic polymer is selected from the group consisting of polyalkylene glycols, polyvinyl alcohols, polypyrrolidones, poly(amino acids), oxidized cellulose and dextrans.

4. The multiblock copolymer of claim 3 wherein the poly(amino acids) are selected from the group consisting of gelatin, fibrinogen and albumin fragments.

5. The multiblock copolymer of claim 1 wherein the hydrophobic polymer is selected from the group consisting of polyphosphazenes, polyphosphate esters, polyanhydrides, polyhydroxybutyric acid, polyorthoesters, polycaprolactone, poly( $\alpha$ -hydroxy acids), polybutylene glycol and copolymers prepared from the monomers of these polymers.

6. A particle having a diameter of between 50 nm and 1000  $\mu$ m formed of or coated with a multiblock copolymer formed by covalently linking a multifunctional compound to at least three polymer blocks, wherein the polymer blocks comprise one or more hydrophilic polymers and one or more hydrophobic bioerodible polymers to form a coblock polymer.

7. The particle of claim 6 further comprising a substance to be delivered selected from the group consisting of peptides, proteins, carbohydrates, nucleic acids, lipids, polysaccharides, combinations thereof, and synthetic inorganic or organic molecules that cause a biological effect when administered to an animal.

8. The particle of claim 6 wherein the hydrophilic polymer is selected from the group consisting of polyalkylene glycols, polyvinyl alcohols, polypyrrolidones, poly(amino acids), oxidized cellulose and dextrans.

9. The particle of claim 8 wherein the poly(amino acid) is selected from the group consisting of gelatin, fibrinogen and albumin fragments.

10. The particle of claim 8 wherein the polyalkylene glycol is selected from the group consisting of polyethylene glycol and polyoxyethylene/polyoxypropylene copolymers.

11. The particle of claim 6 wherein the hydrophobic polymer is selected from the group consisting of polyphosphazenes, polyphosphate esters, polyanhydrides, polyhydroxybutyric acid, polyorthoesters, polycaprolactone, poly( $\alpha$ -hydroxy acids) and copolymers prepared from the monomers of these polymers.

12. The particle of claim 6 wherein the multifunctional compound is selected from the group consisting of dextrans,

pentaerythritol, glucaronic acid, tartaric acid, mucic acid, citric acid, benzene tricarboxylic acid, benzene tetracarboxylic acid and butane diglycidyl ether.

13. The particle of claim 6 comprising molecules covalently bound to the surface of the particle via reactive groups on the hydrophilic polymer, wherein the molecules are selected from the group consisting of biologically active molecules, non-biologically active molecules which can be detected, targeting molecules, and molecules affecting the charge, lipophilicity or hydrophilicity of the particle.

14. The particle of claim 13, wherein the targeting molecule is selected from the group consisting of compounds specifically reactive with a cell surface component, antibodies and antibody fragments.

15. The particle of claim 6 wherein the diameter is less than one micron.

16. The particle of claim 6 wherein the diameter is between one and 1000 microns.

17. The particle of claim 13 wherein the detectable molecule is selected from the group consisting of substances detectable by x-ray, fluorescence, ultrasound, magnetic resonance imaging and radioactivity.

18. The particle of claim 8, wherein the poly(alkylene glycol) is poly(ethylene glycol).

19. The particle of claim 6 formed of a core of a different material than the coblock polymer coating.

20. A method for making a multiblock copolymer by covalently linking a multifunctional compound to at least three polymer blocks, wherein the polymer blocks comprise one or more hydrophilic polymers and one or more hydrophobic bioerodible polymers.

21. The method of claim 20 further comprising forming a particle with a diameter between 50 nm and 1000  $\mu$ m of the coblock polymer or coating a particle with a diameter between 50 nm and 1000  $\mu$ m with the coblock polymer.

22. The method of claim 21 further comprising incorporating a substance in the particle.

23. The method of claim 22 wherein the substance is a biologically active substance selected from the group consisting of peptides, proteins, carbohydrates, nucleic acids, lipids, polysaccharides, combinations thereof, and synthetic inorganic or organic molecules that cause a biological effect when administered in vivo to an animal.

24. The method of claim 20 wherein the hydrophilic polymer is selected from the group consisting of polyalkylene glycols, polyvinyl alcohols, polypyrrolidones, poly(amino acids), oxidized cellulose and dextrans.

25. The method of claim 24 wherein the poly(amino acid) is selected from the group consisting of gelatin, fibrinogen and albumin fragments.

26. The method of claim 20 wherein the hydrophobic polymer is selected from the group consisting of polyphosphazenes, polyphosphate esters, polyanhydrides, polyhydroxybutyric acid, polyorthoesters, polycaprolactone, poly( $\alpha$ -hydroxy acids) and copolymers prepared from the monomers of these polymers.

27. The method of claim 20 wherein the multifunctional compound is selected from the group consisting of dextrans, pentaerythritol, glucaronic acid, tartaric acid, mucic acid, citric acid, benzene tricarboxylic acid, benzene tetracarboxylic acid and butane diglycidyl ether.

28. The method of claim 21 further comprising covalently binding to the surface of the particle via the terminal hydroxyl group of the poly(alkylene glycol) molecules selected from the group consisting of biologically active molecules, non-biologically active molecules which can be detected, targeting molecules, and molecules affecting the charge, lipophilicity or hydrophilicity of the particle.