Claims

1. A method for osteogenesis comprising contacting bone cells to nanostructures in the form of a nanostructure mat and maintaining the contact of the nanostructures and the bone cells for a time sufficient for bone cells to proliferate and/or for the bone cells to deposit bone matrix on the nanostructures.

2. The method of claim 1 wherein the nanostructures are selected from the group consisting of nanosprings, nanowires, nanorods, and nanotubes.

3. The method of claim 2 wherein the nanostructures of the nanostructure mat are bound to a solid surface.

4. The method of claim 2 wherein the nanostructures are not bound to a solid surface.

5. The method of claim 3 wherein the solid surface is metallic.

6. The method of claim 5 wherein the metallic solid surface is titanium or titanium oxide.

7. The method of claim 3 wherein the solid surface is glass.

8. The method of claim 1 wherein the nanostructures comprise silicon dioxide.

9. The method of claim 8 wherein the nanostructures are coated.

10. The method of claim 9 wherein the coating is a metallic coating.

11. The method of claim 10 wherein the metallic coating is selected from the group consisting of gold, silver, copper, nickel, and platinum nanoparticles.

12. The method of claim 9 wherein the nanostructures are textured.

13. A composition comprising a multiplicity of nanostructures in the form of a nanostructure mat and a multiplicity of bone cells in association with the nanostructures.

14. The composition of claim 13 wherein the nanostructures are nanosprings.

15. The composition of claim 13 wherein the nanosprings are of silicon dioxide.

16. The composition of claim 15 wherein the nanosprings are coated with a metallic or metal oxide coating.

17. The composition of claim 14 wherein the nanostructures are textured.

18. The composition of claim 13 wherein the nanostructures of the nanostructure mat are bound to a solid surface.

19. The composition of claim 13 wherein the nanostructures are not bound to a solid surface.

AMENDED CLAIMS
received by the International Bureau on 30 April 2012 (30.04.2012)

1. A method for osteogenesis comprising contacting bone cells to nanosprings in the form of a nanostructure mat and maintaining the contact of the nanosprings and the bone cells for a time sufficient for bone cells to proliferate and/or for the bone cells to deposit bone matrix on the nanostructures.

2. The method of claim 1 wherein the nanostructures of the nanostructure mat are bound to a solid surface.

3. The method of claim 2 wherein the solid surface is metallic.

4. The method of claim 3 wherein the metallic solid surface is titanium or titanium oxide.

5. The method of claim 2 wherein the solid surface is glass.

6. The method of claim 1 wherein the nanostructures are not bound to a solid surface.

7. The method of claim 1 wherein the nanostructures comprise silicon dioxide.

8. The method of claim 7 wherein the nanostructures are coated.

9. The method of claim 8 wherein the coating is a metallic coating.

10. The method of claim 9 wherein the metallic coating is selected from the group consisting of gold, silver, copper, nickel, and platinum nanoparticles.

11. The method of any preceding claim wherein the nanostructures are textured.

12. A composition comprising a multiplicity of nanosprings in the form of a nanostructure mat and a multiplicity of bone cells in association with the nanosprings.

13. The composition of claim 12 wherein the nanosprings are of silicon dioxide.

14. The composition of claim 13 wherein the nanosprings are coated with a metallic or metal oxide coating.

15. The composition of claim 12 wherein the nanosprings are textured.

16. The composition of claim 12 wherein the nanosprings of the nanospring mat are bound to a solid surface other than bone.

17. The composition of claim 12 wherein the nanostructures are not bound to a solid surface other than bone.

STATEMENT UNDER ARTICLE 19 (1)

Applicants submit herewith substitute pages 20 and 21. All independent claims 1 and 12 have been amended to call for nanosprings.

The claims of the application as amended distinguish over the art cited by the Examiner in the International Search Report as the prior art does not disclose nanosprings.

CLAIMS

1. A method for osteogenesis comprising contacting bone cells to silicon dioxide nanosprings in the form of a nanostructure mat, which nanosprings are coated with a zinc or zinc-based coating and with a titanium or titanium-based coating, and maintaining the contact of the nanosprings and the bone cells for a time sufficient for bone cells to proliferate and/or for the bone cells to deposit bone matrix on the nanostructures.

2. A method according to Claim 1, in which the nanostructures of the nanostructure mat are bound to a solid surface.

3. A method according to Claim 2, in which the solid surface is metallic.

4. A method according to Claim 3, in which the metallic solid surface is titanium or titanium oxide.

5. A method according to Claim 2, in which the solid surface is glass.

6. A method according to Claim 1, in which the nanostructures are not bound to a solid surface.

7. A method according to any preceding claim, in which the nanostructures are textured.

8. A composition comprising a multiplicity of silicon dioxide nanosprings in the form of a nanostructure mat, which nanosprings are coated with a film of a zinc or zinc-based coating and a film of a titanium or titanium-based coating, and a multiplicity of bone cells in association with the nanosprings.

9. A composition according to Claim 8, in which the nanosprings are textured.

10. A composition according to Claim 8, in which the nanosprings of the nanospring mat are bound to a solid surface other than bone.

11. A composition according to Claim 8, in which the nanostructures are not bound to a solid surface other than bone.