CLAIMS

What is claimed is:

1. An aqueous formulation comprising [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2, wherein said formulation is suitable for coating a microprojection array and wherein said formulation comprises at least 5% by weight of [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2.

2. An aqueous formulation according to claim 1, wherein said formulation comprises at least 40% by weight of [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2.

3. An aqueous formulation according to claim 1, wherein said formulation comprises at least 45% by weight of [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2.

4. An aqueous formulation according to claim 1, wherein said formulation comprises between 40% and 63% by weight [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2.

5. An aqueous formulation according to any of the preceding claims, wherein said formulation has a viscosity of greater than 500 centipoises at 25 °C and a shear rate of 100 s^{-1}.

6. An aqueous formulation according to any of the preceding claims, wherein said formulation has a viscosity of greater than 1,000 centipoises at 25 °C and a shear rate of 100 s^{-1}.

7. An aqueous formulation according to any of the preceding claims, wherein said formulation has a viscosity of greater than 1,250 centipoises at 25 °C and a shear rate of 100 s^{-1}.

8. An aqueous formulation according to any of the preceding claims, wherein said formulation has a viscosity of greater than 1,500 centipoises at 25 °C and a shear rate of 100 s^{-1}.

9. An aqueous formulation according to any of claims 1-4, wherein said formulation has a viscosity of between 1,000 centipoises and 3,000 centipoises at 25 °C and a shear rate of 100 s^{-1}.

10. An aqueous formulation according to any of the preceding claims, wherein said aqueous solution further comprises acetate and/or acetic acid.

11. An aqueous solution according to any of the preceding claims wherein, said aqueous solution further comprises from 4% to 10% by weight acetate.

12. An aqueous solution according to any of the preceding claims wherein, said aqueous solution further comprises from 1% to 15% by weight histidine.

13. The solution according to claim 12 wherein said histidine is 3% by weight.

14. The solution according to claim 12 wherein said histidine is 5% by weight.

15. An aqueous solution according to any of the preceding claims wherein, said aqueous solution further comprises from 2% to 10% by weight potassium chloride.

16. The solution according to claim 15 wherein said potassium chloride is 9% by weight.

17. An aqueous formulation according to any of the preceding claims, further comprising an amphiphilic surfactant.

18. An aqueous formulation according to any of the preceding claims, further comprising an uncharged amphiphilic surfactant.

19. An aqueous formulation according to any of the preceding claims further comprising a polysaccharide.

20. An aqueous formulation according to any of the preceding claims further comprising sucrose or hydroxyethyl cellulose.

21. An aqueous formulation according to any of the preceding claims further comprising a buffer.

22. An aqueous formulation according to any of the previous claims further comprising a buffered saline solution.

23. An aqueous formulation according to any one of the preceding claims further comprising a 1X phosphate buffered saline solution.

24. An aqueous formulation according to any of the preceding claims wherein said aqueous solution has a pH from 3.0 to 8.0.

25. An aqueous formulation according to any of the previous claims wherein said aqueous formulation has a pH from 3.0 to 7.0.

26. An aqueous formulation according to any of the previous claims wherein said aqueous formulation has a pH from 3.5 to 6.5.

27. An aqueous formulation according to any of the previous claims wherein said aqueous formulation has a pH from 4.0 to 6.0.

28. An aqueous formulation according to any of the previous claims wherein said aqueous formulation has a pH from 4.5 to 5.5.

---

29. A microprojection array suitable for transdermal drug delivery wherein said microprojection array comprises a backing material with a plurality of attached microprojections wherein at least one of said microprojections comprises a coating of a formulation comprising [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2.

30. A microprojection array according to claim 29 wherein said coating is manufactured by a process step comprising application of an aqueous formulation described in any

of claims 1-28.

31. A microprojection array according to claim 30 wherein said process step comprising application is followed by a process step comprising drying of said coating.

32. A microprojection array according to any of claims 29 - 31 wherein said microprojections comprise a carbon containing polymeric material.

33. A microprojection array according to any of claims 29-32 wherein said microprojections comprise a polycarbonate polymer.

34. A microprojection array according to any of claims 29-33 wherein said microprojections comprise a liquid crystal polymer.

35. A microprojection array according to any of claims 29-34 wherein said microprojections comprise a base with a width greater than two times the width at the tip.

36. A microprojection array according to any of claims 29-35 wherein said microprojections comprise a base with a width greater than four times the width at the tip.

37. A microprojection array according to any of claims 29-36 wherein said microprojections comprise a base with a width greater than six times the width at the tip.

38. A microprojection array according to any of claims 29-37 wherein said microprojections are microneedles.

39. A microprojection array according to any of claims 29-38 wherein said microprojections are pyramidal in shape.

40. A microprojection array according to any of claims 29-39 wherein said microprojections have a rectangular base and rectangular tip.

41. A microprojection array according to any of claims 29-39 wherein said microprojections have a square base and square tip.

42. A microprojection array according to any of claims 29-41 wherein said microprojections have a flexural modulus of greater than 1,000 MPa (ISO 178).

43. A microprojection array according to any of claims 29-42 wherein said microprojections have a flexural modulus of greater than 2,000 MPa (ISO 178).

44. A microprojection array according to any of claims 29-43 wherein said microprojections have a flexural modulus of greater than 3,000 MPa (ISO 178).

45. A microprojection array according to any of claims 29-44 wherein said microprojections have a flexural modulus from about 3,000 MPa to about 15,000 MPa (ISO 178).

46. A microprojection array according to any of claims 29-45 wherein said microprojections have a flexural modulus from about 5,000 MPa to about 12,000 MPa (ISO 178).

47. A microprojection array according to any of claims 29-46 wherein said microprojections have a flexural modulus from about 8,000 MPa and 12,000 MPa (ISO 178).

48. A microprojection array according to any of claims 29-47 wherein said microprojections have a flexural modulus from about 9,000 MPa to about 10,000 MPa (ISO 178).

49. A microprojection array according to any of claims 29-48 wherein said microprojections have a flexural modulus of between 9,000 MPa and 9,500 MPa (ISO 178).

50. A microprojection array according to any of claims 29-49 wherein said microprojections are more than 100 microns and less than 1,000 microns in length.

51. A microprojection array according to any of claims 29-50 wherein said microprojections are more than 250 microns and less than 750 microns in length.

52. A microprojection array according to any of claims 29-51 wherein said microprojections are more than 400 microns and less than 600 microns in length.

53. A microprojection array according to any of claims 29-52 wherein said microprojections are about 500 microns in length.

54. A microprojection array according to any of claims 29-53 wherein said array has a microprojection density between 20 and 1,000 microprojections per cm^2.

55. A microprojection array according to any of claims 29-54 wherein said array has a microprojection density between 100 and 500 microprojections per cm^2.

56. A microprojection array according to any of claims 29-55 wherein said array comprises between 50 and 600 microprojections.

57. A microprojection array according to any of claims 29-56 wherein said array comprises between 100 and 500 microprojections.

58. A microprojection array according to any of claims 29-57 wherein said array comprises between 250 and 400 microprojections.

59. A microprojection array according to any of claims 29-58 wherein said array comprises between 300 and 375 microprojections.

60. A microprojection array according to any of claims 29-59 wherein said array comprises about 366 microprojections.

61. A microprojection array according to any of claims 29-59 wherein said array comprises about 316 microprojections.

62. A microprojection array according to any of claims 29-61 wherein said array comprises from about 63.75 μg to about 86.25 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

63. A microprojection array according to any of claims 29-62 wherein said array comprises about 75 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

64. A microprojection array according to any of claims 29-61 wherein said array comprises from about 85 μg to about 115 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

65. A microprojection array according to any of claims 29-61 and 64 wherein said array comprises about 100 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

66. A microprojection array according to any of claims 29-61 wherein said array comprises from about 106.25 μg to about 143.75 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

67. A microprojection array according to any of claims 29-61 and 66 wherein said array comprises about 125 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

68. A microprojection array according to any of claims 29-62 wherein said array comprises from about 127.5 μg to about 172.5 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

69. A microprojection array according to any of claims 29-61 and 68 wherein said array comprises about 150 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

70. A method of administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 to a mammal comprising contacting the skin of said mammal with a microprojection array

according to any of claims 29-69 wherein said contacting occurs with sufficient force to cause penetration of one or more of said microprojections comprising a coating of said formulation into the skin of said mammal.

71. The method of claim 70 wherein said mammal is a human.

72. The method of claim 71 wherein said human has osteopenia or osteoporosis.

73. The method of any of claims 71-72 wherein said human is a post-menopausal woman.

74. The method of any of claims 71-73 wherein said human has glucocorticoid-induced osteopenia or osteoporosis.

75. A method of treating osteoporosis in a human in need thereof comprising administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 once-daily according to the method of any of claims 71-74.

76. A method of treating osteoporosis in a human in need thereof comprising administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 once-weekly according to the method of any of claims 71-74.

77. The method of claim 75 or 76 wherein said microprojection array is contacted on the surface of the stomach area of said human.

78. The method of claim 75 or 76 wherein said microprojection array is contacted on the surface of the deltoid area of said human.

79. The method of claim 75 or 76 wherein said microprojection array is contacted on the surface of the thigh of said human.

80. The method according to any of claims 70-79 wherein said microprojection array is left in place with one or more of said microprojections embedded in the skin after said contacting for a period of from about 10 seconds to about 24 hours.

81. The method of claim 80 wherein said period is from about 10 seconds to about 1 hour.

82. The method of claim 80 wherein said period is from about 10 seconds to about 30 minutes.

83. The method of claim 80 wherein said period is from about 10 seconds to about 15 minutes.

84. The method of claim 80 wherein said period is from about 10 seconds to about 5 minutes.

85. The method of claim 80 wherein said period is about 10 seconds.

86. The method of claim 80 wherein said period is about 30 seconds.

87. The method of claim 80 wherein said period is about 1 minute.

88. The method of claim 80 wherein said period is about 5 minutes.

89. The method of claim 80 wherein said period is about 15 minutes.

90. The method of claim 80 wherein said period is about 30 minutes.

91. A method of treating post-menopausal osteoporosis comprising administering [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2 to a woman in need thereof said administering comprising contacting the skin of said woman with a microprojection array as described in any of claims 29-69 wherein said contacting occurs with sufficient force to cause penetration of one or more of said microprojection members into the skin of said woman and wherein said administration results in C_{max} plasma levels of [Glu^{22,25}, Leu^{23,28,31}, Aib^{29}, Lys^{26,30}]hPTHrP(1-34)NH_2 of greater than 200 pg/mL.

92. The method of claim 91 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 300 pg/mL.

93. The method of claim 91 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 400 pg/mL.

94. The method of claim 91 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 500 pg/mL.

95. The method of any of claims 91-94 wherein the plasma T_{max} occurs at less than one hour post-administration time.

96. The method of any of the claims 91-95 wherein the plasma T_{max} occurs at less than ½ hour post administration time.

97. A method of treating one or more fractured bones comprising administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 to a human in need thereof by contacting the skin of said human with a microprojection array as described in any of claims 29-69 wherein said contacting occurs with sufficient force to cause penetration of one or more of said microprojection members into the skin of said human.

98. The method of claim 97 wherein said administering is a once-daily administration.

99. The method of any of claims 97 or 98 said microprojection array is left in place with one or more of said microprojections imbedded in the skin after said contacting for a period of from about 10 seconds to about 24 hours.

100. The method of claim 99 wherein said period is from about 10 seconds to about 1 hour.

101. The method of claim 99 wherein said period is from about 10 seconds to about 30 minutes.

102. The method of claim 99 wherein said period is from about 10 seconds to about 15 minutes.

103. The method of claim 99 wherein said period is from about 10 seconds to about 5 minutes.

104. The method of claim 99 wherein said period is about 10 seconds.

105. The method of claim 99 wherein said period is about 30 seconds.

106. The method of claim 99 wherein said period is about 1 minutes.

107. The method of claim 99 wherein said period is about 5 minutes.

108. The method of claim 99 wherein said period is about 15 minutes.

109. The method of claim 99 wherein said period is about 30 minutes.

110. The method of any of claims 97-109 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 200 pg/mL.

111. The method of claim any of claims 97-110 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 300 pg/mL.

112. The method of any of claims 97-111 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 400 pg/mL.

113. The method of any of claims 97-112 wherein said administering results in C_{max} plasma levels of $Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 500 pg/mL.

114. The method of any of claims 97-113 wherein the plasma T_{max} occurs at less than one hour post-administration time.

115. The method of any of the claims 97-114 wherein the plasma T_{max} occurs at less than ½ hour post administration time.

116. The method of any of claims 97-115 wherein said microprojection array is contacted on the surface of the stomach area of said human.

117. The method of any of claims claim 97-115 wherein said microprojection array is contacted on the surface of the deltoid region of said human.

118. The method of any of claims 97-115 wherein said microprojection array is contacted on the surface of the thigh of said human.

119. The method of any of claims 97-118 wherein said one or more fractured bones was detected within 3 months from the time that said administering begins.

120. The method of any of claims 97-119 wherein said one or more fractured bones was detected within 1 month from the time that said administering begins.

121. The method of any of claims 97-120 wherein said one or more fractured bones was detected within two weeks from the time that said administering begins.

122. A method of treating osteoarthritis comprising administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 to a human in need thereof by contacting the skin of said human with a microprojection array as described in any of claims 29-69 wherein said contacting occurs with sufficient force to cause penetration of one or more of said microprojection members into the skin of said human.

123. The method of claim 122 wherein said administering is a once-daily administration.

124. The method of any of claims 122 or 123 wherein said microprojection array is left in place with one or more of said microprojections embedded in the skin after said contacting for a period of from about 10 seconds to about 24 hours.

125. The method of claim 124 wherein said period is from about 10 seconds to about 1 hour.

126. The method of claim 124 wherein said period is from about 10 seconds to about 30 minutes.

127. The method of claim 124 wherein said period is from about 10 seconds to about 15 minutes.

128. The method of claim 124 wherein said period is from about 10 seconds to about 5 minutes.

129. The method of claim 124 wherein said period is about 10 seconds.

130. The method of claim 124 wherein said period is about 30 seconds.

131. The method of claim 124 wherein said period is about 1 minute.

132. The method of claim 124 wherein said period is about 5 minutes.

133. The method of claim 124 wherein said period is about 15 minutes.

134. The method of claim 124 wherein said period is about 30 minutes.

135. The method of any of claims 122-134 wherein said administration results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 200 pg/mL.

136. The method of any of claims 122-134 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 300 pg/mL.

137. The method of any of claims 122-134 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 400 pg/mL.

138. The method of any of claims 122-134 wherein said administering results in C_{max} plasma levels of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 of greater than 500 pg/mL.

139. The method of any of claims 122-134 wherein the plasma T_{max} occurs at less than one hour post-administration time.

140. The method of any of the claims 122-134 wherein the plasma T_{max} occurs at less than ½ hour post administration time.

141. The method of any of claims 122-140 wherein said microprojection array is contacted on the surface of the stomach area of said human.

142. The method of any of claims claim 122-140 wherein said microprojection array is contacted on the surface of the deltoid region of said human.

143. The method of any of claims 122-140 wherein said microprojection array is contacted on the surface of the thigh of said human.

144. The method of any of claims 122-140 wherein said microprojection array is contacted on the surface of the upper chest of said human.

CLAIMS

1. A microprojection array suitable for transdermal drug delivery wherein said microprojection array comprises a backing material with a plurality of attached microprojections wherein at least one of said microprojections comprises a coating of a formulation comprising [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

2. A microprojection array according to claim 1 wherein said microprojections comprise a polycarbonate polymer.

3. A microprojection array according to claim 1 wherein said microprojections comprise a liquid crystal polymer.

4. A microprojection array according to claim 1 wherein said microprojections comprise a base with a width greater than two times the width at the tip.

5. A microprojection array according to claim 1 wherein said microprojections comprise a base with a width greater than four times the width at the tip.

6. A microprojection array according to claim 1 wherein said microprojections comprise a base with a width greater than six times the width at the tip.

7. A microprojection array according to claim 1 wherein said microprojections are microneedles.

8. A microprojection array according to claim 1 wherein said microprojections are pyramidal in shape.

9. A microprojection array according to claim 1 wherein said microprojections have a rectangular base and rectangular tip.

10. A microprojection array according to claim 1 wherein said microprojections have a square base and square tip.

11. A microprojection array according to claim 1 wherein said microprojections have a flexural modulus of greater than 1,000 MPa (ISO 178).

12. A microprojection array according to claim 1 wherein said microprojections have a flexural modulus from about 8,000 MPa and 12,000 MPa (ISO 178).

13. A microprojection array according to claim 1 wherein said microprojections have a flexural modulus from about 9,000 MPa to about 10,000 MPa (ISO 178).

14. A microprojection array according to claim 1 wherein said microprojections have a flexural modulus of between 9,000 MPa and 9,500 MPa (ISO 178).

15. A microprojection array according to claim 1 wherein said microprojections are more than 100 microns and less than 1,000 microns in length.

16. A microprojection array according to claim 1 wherein said microprojections are more than 400 microns and less than 600 microns in length.

17. A microprojection array according to claim 1 wherein said microprojections are about 500 microns in length.

18. A microprojection array according to claim 1 wherein said array comprises between 100 and 500 microprojections.

19. A microprojection array according to claim 1 wherein said array comprises between 250 and 400 microprojections.

20. A microprojection array according to claim 1 wherein said array comprises between 300 and 375 microprojections.

21. A microprojection array according to claim 1 wherein said array comprises from about 85 μg to about 115 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

22. A microprojection array according to claim 21 wherein said array comprises about 100 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

23. A microprojection array according to claim 1 wherein said array comprises from about 106.25 μg to about 143.75 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

24. A microprojection array according to claim 1 wherein said array comprises from about 127.5 μg to about 172.5 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

25. A microprojection array according to claim 24 wherein said array comprises about 150 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

26. A method of administering [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 to a mammal comprising contacting the skin of said mammal with a microprojection array according to claim 1 wherein said contacting occurs with sufficient force to cause penetration of one or more of said microprojections comprising a coating of said formulation into the skin of said mammal.

27. The method of claim 26 wherein said mammal is a human.

28. The method of claim 27 wherein said human has osteopenia or osteoporosis.

29. The method of claim 27 wherein said human is a post-menopausal woman.

30. The method of claim 27 wherein said human has glucocorticoid-induced osteopenia or osteoporosis.

31. A microprojection array according to claim 1 wherein said array comprises about 366 microprojections, wherein said microprojections comprise a polycarbonate polymer, and wherein said coating comprises from about 85 μg to about 230 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

32. A microprojection array according to claim 1 wherein said array comprises about 316 microprojections, wherein said microprojections comprise a liquid crystal polymer, and wherein said coating comprises from about 85 μg to about 230 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

33. A microprojection array according to claim 1 wherein said coating further comprises sucrose or hydroxyethyl cellulose.

34. A microprojection array according to claim 1 wherein said coating further comprises histidine or potassium chloride.

35. A microprojection array according to claim 1 wherein said array comprises at least 63.75 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

36. A microprojection array according to claim 1 wherein said microprojection array comprises from about 80 μg to about 450 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2.

37. A microprojection array according to claim 1 wherein said microprojection array comprises from about 85 μg to about 230 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH2.

38. A microprojection array according to claim 1 wherein said microprojection array comprises from about 20 μg to about 386 μg of [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH2.

39. The microprojection array according to Claim 1, wherein said formulation comprises 40 to 63 wt-% of[$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 (SEQ ID NO.: 2).

40. The microprojection array according to Claim 1, wherein said formulation comprises 50 to 62wt-% of[$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29}, $Lys^{26,30}$]hPTHrP(1-34)NH_2 (SEQ ID NO.: 2).