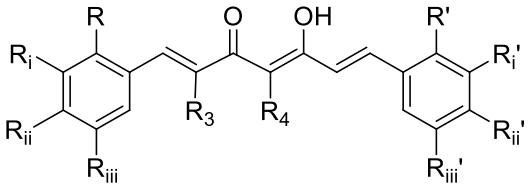
WHAT IS CLAIMED IS:

1. A composition comprising a compound and isolated cells capable of differentiating into bone cells, wherein the compound has the structure of:



VI

,

wherein R, R_i, R_{iii}, R', R_i', and R_{iii}' are each hydrogen;

R_{ii}, and R_{ii}' are independently selected from the group consisting of glycine-*O*-carboxylate, sarcosine-*O*-carboxylate, alanine-*O*-carboxylate, valine-*O*-carboxylate, leucine-*O*-carboxylate, isoleucine-*O*-carboxylate, phenylalanine-*O*-carboxylate, tyrosine-*O*-carboxylate, tryptophan-*O*-carboxylate, asparagine-*O*-carboxylate, glutamine-*O*-carboxylate, lysine-*O*-carboxylate, and proline-*O*-carboxylate; and

R_3 and R_4 are independently hydrogen, methyl, trideuteromethyl, trifluoromethyl, ethyl, propyl, isopropyl, butyl, *sec*-butyl, *iso*-butyl, *tert*-butyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl,

or R_3 and R_4 are taken with an alkyl chain to define a 5-membered or 6-membered carbocyclic ring,

wherein the composition further comprises a calcium phosphate matrix, and the compound is non-covalently associated with the calcium phosphate matrix.

2. The composition of claim 1, wherein the isolated cells capable of differentiating into bone cells are isolated human bone marrow-derived mesenchymal stem cells, human mesenchymal stem cells of adipose tissue, human mesenchymal stem cells of blood, human mesenchymal stem cells of bone allograft or autograft tissues, human mesenchymal stem cells of dental pulp, human pericytes, human myoblasts, and human chondrocytes, human osteoprogenitor cells, urine stem cells, cells isolated from amniotic fluid or cord blood, embryonic stem cells, or induced pluripotent stem cells.

3. The composition of claim 1 or 2, wherein the calcium phosphate matrix is a tricalcium phosphate ceramic.

4. The composition of claim 1, wherein the compound is (2*S*,2'*S*)-*O*,*O*'-(3-hydroxy-5-oxohepta-1,3,6-triene-1,7-diyl)bis(4,1-phenylene) bis (2-amino-3-methylbutanoate) HCl salt, the isolated cells are human bone marrow-derived mesenchymal stem cells, and the calcium phosphate matrix is a tricalcium phosphate ceramic.

5. The composition of claim 1, wherein the compound 4-((1*E*,3*Z*)-3-(3-((*E*)-4-((L-valyl)oxy)-benzylidene)-2-oxocyclohexylidene)-3-hydroxyprop-1-en-1-yl)phenyl L-valinate HCl salt, the isolated cells are human bone marrow-derived mesenchymal stem cells, and the calcium phosphate matrix is a tricalcium phosphate ceramic.

6. The composition of claim 4 or 5 further comprising one or more components selected from the group consisting of bone morphogenetic proteins, fibroblast growth factors, platelet-derived growth factors, Wnt proteins, transforming growth factors, stromal derived factor-1, parathyroid growth hormone, vitamin D, 1,25-dihydroxy vitamin D, deoxycholic acid, teriparatide, ascorbic acid, ascorbic acid 2-phosphate, beta-glycerol phosphate, dexamethasone, and their respective salts.

7. Use of a composition of claim 1 in preparation of a medicant for treating a bone fracture in a subject by inducing bone formation.

8. A surgical cage having isolated cells capable of differentiating into bone cells, a calcium phosphate matrix, and a compound having the structure of Formula VI of claim 1 to provide a bone graft material contained therein.