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(54) Title: MICROSPHERE-BASED MATERIALS WITH PREDEFINED 3D SPATIAL AND TEMPORAL CONTROL OF BIOMATERIALS, POROSITY AND/OR BIOACTIVE SIGNALS

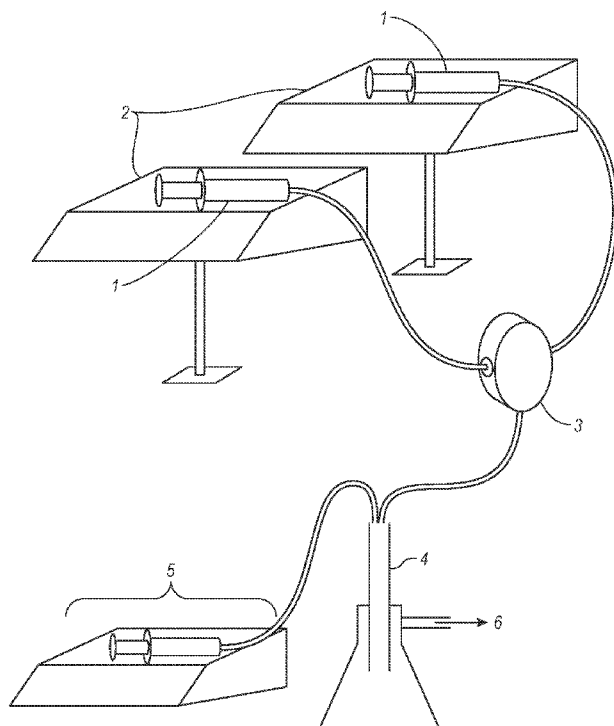


Fig. 1

(57) Abstract: A tissue engineering scaffold for growing cells can include a plurality of biocompatible microspheres linked together to form a three-dimensional matrix. The matrix can include a plurality of pores for growing cells. The biocompatible microspheres can include first and second sets of microspheres. The first set of microspheres can have a first characteristic, and a first predetermined spatial distribution with respect to the three-dimensional matrix. The second set of microspheres can have a second characteristic that is different from the first characteristic, and a second predetermined spatial distribution that is different from the first predetermined spatial distribution with respect to the three-dimensional matrix. The first and second characteristics can selected a composition, polymer, particle size, particle size distribution, type of bioactive agent, type of bioactive agent combination, bioactive agent concentration, amount of bioactive agent, rate of bioactive agent release, mechanical strength, flexibility, rigidity, color, radiotranslucency, radiopaqueness, or the like.

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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) &amp; keywords: tissue, cell, microsphere, pore, scaffold, matrix, 3D-spatial, spatial distribution

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2007/0093912 A1 (BORDEN, MARK) 26 April 2007 See abstract, figures 1-4, paragraphs 29-42, 54, 60, 65, 74-76 and 81, claims 1-32	1-28, 39, 40 29-38
Y A	WO 2006/057374 A1 (JAPAN SCIENCE AND TECHNOLOGY AGENCY) 01 June 2006 See abstract, page 5, claims 1 and 6	29-38 1-28, 39, 40
X A	US 2006/0067969 A1 (LU, HELEN H. et al.) 30 March 2006 See abstract, figures 18, 23, 24, 31 and 32, claims 1-11 and 32-37	1-21, 25-28, 39, 40 22-24, 29-38
X A	WO 03/000234 A1 (THE UNIVERSITY OF NOTTINGHAM) 03 January 2003 See abstract, pages 3-6, claims 1-4, 8-16 and 22	1-21, 25-28, 39, 40 22-24, 29-38
A	US 2003/0175410 A1 (CAMPBELL, PHIL G. and WEISS, LEE E.) 18 September 2003 See abstract, page 6, claims 1-6, 20-35, 47-53	1-40

 Further documents are listed in the continuation of Box C. See patent family annex.

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