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(54) Title: METHOD FOR INDUCTION OF DIFFERENTIATION OF STEM AND PROGENITOR CELLS

(57) Abstract: The invention relates to propagation and differentiation of stem cells and the chemical stimuli which are used in the environment of those cells to induce differentiation. More in particular, the invention provides a method for the ex vivo induction of differentiation of mesenchymal stem cells, preferably derived from adipose tissue, or progenitor cells by adding a polyamine to the cells for a short time (1 min - 2 hours) and subsequent removal. Other differentiation inducing factors may be added in parallel, preferably from the group essentially consisting of steroid hormones, vitamins and/or growth hormones, LMP-I, and combinations of these. The method described preferably provides osteogenic or chondrogenic differentiation, and cells are therefore preferably combined with bioresorbable materials, such as osteoconductive calciumphosphates, bioresorbable polymers such as polylactids or polyglycolids, poly-caprolactones, collagens, minerals, fibrinogens, alginates, hyaluronases, chitosan and/or combinations of these. The stem cells and/or bioresorbable materials will either be directly implanted, or further cultured in the proper culture medium prior to implantation. In addition, polyamine use is described as a method for preventing dedifferentiation of cells and/or inducing transdifferentiation of cells.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K31/132 C12P13/10 C12N5/06

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K C12P C12N

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

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

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MAEDA TOMOJI ET AL: "Role of polyamines derived from arginine in differentiation and proliferation of human blood cells." BIOLOGICAL & PHARMACEUTICAL BULLETIN FEB 2006, vol. 29, no. 2, February 2006 (2006-02), pages 234-239, XP002445025 ISSN: 0918-6158 page 235, right-hand column, last paragraph - page 237, right-hand column ----- -/--	1,3,4,9, 11-15

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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International application No

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