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(54) Title: DERMAL MICRO ORGANS, METHODS AND APPARATUSES FOR PRODUCING AND USING THE SAME

(57) Abstract: Embodiments of the present invention provide Dermal Micro Organs (DMOs), methods and apparatuses for producing the same. Some embodiments of the invention provide a DMO including a plurality of dermal components, which substantially retain the micro-architecture and three dimensional structure of the dermal tissue from which they are derived, having dimensions selected so as to allow passive diffusion of adequate nutrients and gases to cells of the DMO and diffusion of cellular waste out of the cells so as to minimize cellular toxicity and concomitant death due to insufficient nutrition and accumulation of waste in the DMO. Some embodiments of the invention provide methods and apparatuses for harvesting the DMO. An apparatus for harvesting the DMO may include, according to some exemplary embodiments, a support configuration to support a skin-related tissue structure from which the DMO is to be harvested, and a cutting tool able to separate the DMO from the skin-related tissue structure. Other embodiments are described and claimed.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/13194

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : A01N 63/00,65/00; C12N 5/00,5/02
US CL : ddd
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)
U.S. : 424/93.1, 93.7; 435/325,373,375,377,382

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 practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,888,720 (MITRANI) 30 March 1999 (30.03.1999).	1-6, 31-42, -----
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Y		1-6, 14-18, 31-46, 51, 53-56, 73-76
Y	US 6,472,200 B1 (MITRANI) 29 October 2002 (29.10.2002).	1-6, 14-18
Y	US 6,197,575 B1 (GRIFFITH et al) 06 March 2001 (06.03.2001)	43-46, 51, 53-56, 73-76
Y	US 6,036,657 (MILLIMAN et al) 14 March 2000 (14.03.2000).	43-46, 51, 53-56, 73-76
Y	US 2002/0068880 A1 (BURBANK et al) 06 June 2002 (06.06.2002).	43-46, 51, 53-56, 73-76

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

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/13194

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claim Nos.: 7-13,19-30,47-50,52,57-72 and 77-88
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
 2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
 3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

 4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/US04/13194

Continuation of B. FIELDS SEARCHED Item 3:
CAPLUS, MEDLINE, EMBASE, BIOSIS, LIFESCI, WEST
search terms: micro-organ, dermal, gene therapy, transplantation