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(54) **Title:** INSULIN PRODUCING CELL-LINE OBTAINED BY ELECTROFUSION

(57) **Abstract:** The invention provides insulin secreting human pancreatic cell lines and a process for their production from the electrofusion of normal human islet cells with immortal human cell lines to generate hybrid fusion cells which are able to produce insulin. The invention also provides uses for cell-lines.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/07 C12N5/22 C07K14/62 A61K35/39 A61K48/00
C12N5/06

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)
IPC 7 C12N A61K

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, BIOSIS, MEDLINE, WPI Data, CHEM ABS Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 251 107 A (MERRELL DOW PHARMA) 7 January 1988 (1988-01-07) "Improved fusion products" column 17, line 18 -column 17, line 35; claim 8; example 1 ---	1,3
X	MCCLENAGHAN NEVILLE H ET AL: "Characterization of a novel glucose-responsive insulin-secreting cell line, BRIN-BD11, produced by electrofusion." DIABETES, vol. 45, no. 8, 1996, pages 1132-1140, XP001056255 ISSN: 0012-1797 page 1133, left-hand column, last paragraph -right-hand column, paragraph FIRST --- -/--	1,3,4

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Niebuhr-Ebel, K

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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.
A	MCCLENAGHAN NEVILLE H ET AL: "Engineering cultured insulin-secreting pancreatic B-cell lines." JOURNAL OF MOLECULAR MEDICINE (BERLIN), vol. 77, no. 1, January 1999 (1999-01), pages 235-243, XP002190163 ISSN: 0946-2716 abstract page 237, right-hand column, paragraphs 3,4 page 242, left-hand column, paragraph 2 ---	1,3-17
A	WELSH N: "Gene therapy in diabetes mellitus: promises and pitfalls" CURR OPIN MOL THER, vol. 1, no. 4, August 1999 (1999-08), pages 464-470, XP001056458 the whole document -----	18

INTERNATIONAL SEARCH REPORT

...ormation on patent family members

Inter ...nal Application No
PCT/GB 01/03476

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0251107 A	07-01-1988	AU 600281 B2	09-08-1990
		AU 7451587 A	07-01-1988
		CN 87104365 A	03-02-1988
		DK 319687 A	25-12-1987
		EP 0251107 A2	07-01-1988
		FI 872788 A	25-12-1987
		HU 44078 A2	28-01-1988
		IL 82972 A	30-06-1991
		JP 63003787 A	08-01-1988
		NO 872630 A	28-12-1987
		NZ 220766 A	28-05-1990
		PT 85151 A ,B	01-07-1987
		ZA 8704410 A	27-04-1988