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(54) Title: PURGING OF CELLS USING VIRUSES

(57) Abstract: The subject invention relates to viruses that are able to purge (reduce or eliminate) undesirable cells in a mixture of cells. Undesirable cells can include neoplastic cells, cells mediating graft-versus host diseases, and autoimmune cells. The subject invention also relates to the purging of undesirable cells from bone marrow or peripheral blood cells harvests in the treatment of mammals including cancer patients, transplant recipients and patients with autoimmune disease.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N5/06 C12N5/08 A01N1/02 A61L2/00 A61K35/12
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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)

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, WPI Data, BIOSIS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BELCH A R ET AL: "Novel therapeutic strategies in multiple myeloma (MM): Use of shiga-like toxin (SLT) or reovirus to purge." BLOOD, vol. 92, no. 10 Suppl. 1 Part 1-2, 15 November 1998 (1998-11-15), pages 104A-105A, XP001053218 40th Annual Meeting of the American Society of Hematology; Miami Beach, Florida, USA; 4-8 December 1998	1,2,4,5, 13-24
Y	abstract 426 --- -/--	3,6-12

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

☒ Patent family members are listed in 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
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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.
X	SETH P ET AL: "Adenovirus-mediated gene transfer to human breast tumor cells: An approach for cancer gene therapy and bone marrow purging." CANCER RESEARCH, vol. 56, no. 6, 1996, pages 1346-1351, XP002112678	1,17-24
Y	the whole document ---	2-16
X	WU A G ET AL: "Bone marrow purging of neuroblastoma by attenuated multimitated herpes simplex virus." PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH ANNUAL, vol. 39, March 1998 (1998-03), page 605 XP002187903 89th Annual Meeting of the American Association for Cancer Research; New Orleans, USA; 28 March-1 April 1998 Abstract 4113 ---	1,17-24
Y	WO 99 18799 A (ROBERTS MICHAEL S ;PRO VIRUS INC (US); RABIN HARVEY (US); GROENE W) 22 April 1999 (1999-04-22) cited in the application examples; table 1 ---	2-16
P,X	STOJDL D F ET AL: "Exploiting tumor-specific defects in the interferon pathway with a previously unknown oncolytic virus." NATURE MEDICINE, vol. 6, no. 7, July 2000 (2000-07), pages 821-825, XP002162486 the whole document ---	1-9, 17-24
P,X	LICHTY B D ET AL: "Identification of vesicular stomatitis virus as a leukemolytic agent." BLOOD, vol. 96, no. 11 Part 2, 16 November 2000 (2000-11-16), page 213b XP002187915 42nd Annual Meeting of the American Society of Hematology; San Francisco, USA; 1-5 December 2000 Abstract 4642 -----	1-9, 17-24

INTERNATIONAL SEARCH REPORT

In International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9918799	A	22-04-1999	AU 9603898 A	03-05-1999
			CN 1281336 T	24-01-2001
			EP 1032269 A1	06-09-2000
			HU 0003911 A2	28-02-2001
			JP 2001519175 T	23-10-2001
			WO 9918799 A1	22-04-1999