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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR REGENERATING AN IMMUNE SYSTEM

(57) Abstract: An isolated and purified cell line of hematopoeitic stem cells (HSC) that are incapable of expressing the CCR5 receptor on the cell surface ("the CCR5Δ32 cells" are used to regenerate the immune system in a subject in need thereof and especially to treat a subject infected with human immunodeficiency virus (HIV). The method is carried out by transplanting CCR5Δ32 into the recipient subject. Because mature immune cells derived from CCR5Δ32 cells cannot express functional CCR5 receptors, they will be resistant to infection by HIV and other pathogens that use the CCR5 receptor to infect cells. An embodiment of the invention includes administration of a nutritional regimen to the patient that optimizes conditions for CCR5Δ32 cell transplantation. Another embodiment of the invention includes co-transplanting mesenchymal cells along with the HSC in order to enhance the growth and development of the transplanted HSC.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

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US Cl. 435/372

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)

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)
WPIDS, MEDLINE, CAPLUS, BIOSIS (hematopoietic, haematopoietic, progenit?, stem, CCR5, CKR5, chemokine receptor 5, non()function?, regenerat?, renew?, restor?, re-establish?, reconstitut?, treat, therapy, transplant?, graft?, HIV, AIDS)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Bai J. et. al., "Characterization of Anti-CCR5 Ribozyme-Transduced $CD34^+$ Hematopoietic Progenitor Cells *in Vitro* and in a SCID-hu Mouse Model *in Vivo*", Molecular Therapy, March 2000, **1**(3), pg 244-54 See whole document especially Abstract; Pages 245, 248 and 250	1-3, 6, 7, 12, 16
X	US 2003/0039642 A1 (Rader et. al.) 27 February 2003 See whole document especially Pages 3 and 6; Example 3; Claim 1	1-3, 6, 7, 12, 16
X	WO 2004/013330 A1 (Consejo Superior De Investigaciones Científicas et. al.) 12 February 2004 See whole document especially Abstract	1-3, 6, 7

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

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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.
	Li M-J. et. al., "Long-Term Inhibition of HIV-1 Infection in Primary Hematopoietic Cells by Lentiviral Vector Delivery of a Triple Combination of Anti-HIV shRNA, Anti-CCR5 Ribozyme, and a Nucleolar-Localizing TAR Decoy", Molecular Therapy: The Journal of the American Society of Gene Therapy, 22 August 2005, **12**(5), pg 900-9	
X	See the whole document especially the Abstract	1-3, 6, 7
	Anderson J. et. al., "CXCR4 and CCR5 shRNA transgenic CD34+ cell derived macrophages are functionally normal and resist HIV-1 infection", Retrovirology, 18 August 2005, **2**(53), pg 1-11	
X	See whole document especially the Abstract	1-3, 6, 7
	Akkina R. et. al., "siRNAs, Ribozymes and RNA Decoys in Modeling Stem Cell-based Gene Therapy for HIV/AIDS", Anticancer Research, May 2003, **23**(3A), pg 1997-2005	
X	See whole document especially the Abstract	1-3, 6, 7
	Bai J. et. al., "Multivalent Anti-CCR5 Ribozymes for Stem Cell-Based HIV Type 1 Gene Therapy", AIDS Research and Human Retroviruses, 20 March 2001, **17**(5), pg 385-399	
X	See the whole document especially the Abstract and Page 392	1-3, 6, 7
	Banerjea A. et. al., "Lentiviral Transduction of Tar Decoy and CCR5 ribozyme into CD34+ progenitor cells and derivation of HIV-1 resistant T cells and macrophages", AIDS Research and Therapy, 17 December 2004, **1**(2), pg 1-11	
X	See whole document especially the Abstract	1-3, 6, 7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2006/029483

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. These particulars are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
US	2003039462		
WO	2004013330	AU	2003281858

END OF ANNEX