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(21) International Application Number: PCT/US93/09649 (22) International Filing Date: 8 October 1993 (08.10.93) (30) Priority data: 07/959,284 9 October 1992 (09.10.92) US (71) Applicant: REGENERON PHARMACEUTICALS, INC. [US/US]; 777 Old Saw Mill River Road, Tarrytown, NY 10591 (US). (72) Inventor: PANAYOTATOS, Nikos ; 95 Monmouth Court, Orangeburg, NY 10962 (US). (74) Agents: KEMPLER, Gail; Regeneron Pharmaceuticals, Inc., 777 Old Saw Mill River Road, Tarrytown, NY 10591-6707 (US) et al.		(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 26 May 1994 (26.05.94)	
(54) Title: MODIFIED CILIARY NEUROTROPHIC FACTORS			
(57) Abstract Human ciliary neurotrophic factor is modified by amino acid substitution to give CNTF's of value in treating diseases or disorders of the nervous system. Recombinant DNA techniques for their production are described. Also described is a method of screening for novel therapeutic proteins by determining altered electrophoretic binding properties.			

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INTERNATIONAL SEARCH REPORT

Inter national Application No
PCT/US 93/09649

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 C12N15/12 C07K13/00 C12N5/10 A61K37/02 G01N33/68

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 5 C07K G01N 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JOURNAL OF NEUROCHEMISTRY vol. 57, no. 3, September 1991 pages 1003 - 1012 PIOTR MASIAKOWSKI ET AL. 'Recombinant human and rat ciliary neurotrophic factors' see abstract see page 1007, right column, paragraph 3 see page 1009, left column, paragraph 2 - right column, paragraph 1 see page 1010, left column, paragraph 2 - page 1011, right column, paragraph 3 ---	1-9,11
A	EP,A,0 446 931 (FIDIA S.P.A.) 18 September 1991 see page 3, line 41 - line 49 see page 4, line 48 - line 53 see page 11, line 1 - line 14 --- -/-	1,12-28

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

☒ Patent family members are listed in annex.

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- *&* document member of the same patent family

Date of the actual completion of the international search

5 April 1994

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INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 93/09649

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	JOURNAL OF BIOLOGICAL CHEMISTRY vol. 268, no. 25 , 5 September 1993 , BALTIMORE, MD US pages 19000 - 19003 NIKOS PANAYOTATOS ET AL. 'Exchange of a single amino acid interconverts the specific activity and gel mobility of human and rat ciliary neurotrophic factors' see abstract see page 19000, left column, paragraph 2 - right column, paragraph 3 see page 19001, right column, paragraph 2 - page 19003, right column, paragraph 2 -----	1-6,9,29

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 93/09649

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0446931	18-09-91	AU-A- 7291891	19-09-91
		CN-A- 1057295	25-12-91
		HU-A- 62033	29-03-93
		JP-A- 4218374	07-08-92
