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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
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- Published:**  
— *with international search report*  
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(54) Title: COMPOUNDS RESISTANT TO METABOLIC DEACTIVATION AND METHODS OF USE

(57) Abstract: Therapeutic compounds having increased resistance to deamination and inactivation by metabolic enzymes are provided. The compounds include nucleotide analogs and nucleotide analogs, derivatized with amination and/or thioamination groups to prevent deamination of free amine. The compounds can be used in a variety of treatments, including treatment of neoplastic disorders, infections from fungal or fungal like organisms, and infections from parasites.

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**INTERNATIONAL SEARCH REPORT**

International Application No  
PCT/US 03/38638

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 C07H19/04 A61K31/70 A61P35/02				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 C07H A61K A61P				
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, CHEM ABS Data, PAJ				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	WO 00/75142 A (WALL MARK ; BAKER STEPHEN J (US); SHAPIRO LUCILLE (US); WAHNON DAPHNE) 14 December 2000 (2000-12-14)	1,2,4-7, 9-17, 21-25, 62-70 26-61		
Y	page 20 - page 22			
X	HORWITZ, JEROME P. ET AL: "Nucleosides. XIII. Concurrent introduction of two different blocking groups into some ribonucleosides" JOURNAL OF ORGANIC CHEMISTRY , 36(19), 2809-12 CODEN: JOCEAH; ISSN: 0022-3263, 1971, XP002284906 page 2810	1,2,4-7, 9-17, 21-25, 62-70		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width:100%; border:none;"> <tr> <td style="width:50%; border:none;">                     *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                      *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)                      *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                 </td> <td style="width:50%; border:none;">                     *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                      *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                      *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.                      *Z* document member of the same patent family                 </td> </tr> </table>			*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 *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) *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	*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 *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 *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. *Z* document member of the same patent family
*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 *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) *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	*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 *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 *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. *Z* document member of the same patent family			
Date of the actual completion of the international search  <p align="center">17 June 2004</p>		Date of mailing of the international search report  <p align="center">01/07/2004</p>		
Name and mailing address of the ISA 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		Authorized officer  <p align="center">Bardili, W</p>		

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/38638

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ZEMLIČKA, JIRI ET AL: "Some transformations of DL-phenylalanine ortho esters and N-benzyloxycarbonyl-L-phenylalaninal" JOURNAL OF ORGANIC CHEMISTRY, 41(20), 3317-21 CODEN: JOCEAH; ISSN: 0022-3263, 1976, XP002284907 page 3318 -----	1,2,4-7, 9-17, 21-25, 62-70
X	US 4 495 180 A (ALEXANDER JOSE) 22 January 1985 (1985-01-22)	1,2,4-7, 9-17, 21-25, 62-70
Y	the whole document	1-70
X	PATENT ABSTRACTS OF JAPAN vol. 0062, no. 08 (C-130), 20 October 1982 (1982-10-20) & JP 57 114516 A (KOGYO GIJUTSUIN; others: OJ), 16 July 1982 (1982-07-16) -----	1,2,4-7, 9-17, 21-25, 62-70
Y	abstract	26-61
X	PATENT ABSTRACTS OF JAPAN vol. 0041, no. 40 (C-026), 3 October 1980 (1980-10-03) & JP 55 089296 A (AGENCY OF IND SCIENCE & TECHNOL), 5 July 1980 (1980-07-05) -----	1,2,4-7, 9-17, 21-25, 62-70
Y	abstract	26-61
X	YAMAZAKI, YOSHIMITSU ET AL: "N6-Alkylthiomethyl and N6-arylthiomethyl derivatives of adenosine and their cytokinin activity" AGRICULTURAL AND BIOLOGICAL CHEMISTRY, 43(9), 1945-50 CODEN: ABCHA6; ISSN: 0002-1369, 1979, XP009031000 -----	1,2,4-7, 9-17, 21-25, 62-70
Y	the whole document	26-61
X	BRIMACOMBE, R. ET AL: "Oligonucleotidic compounds. XXIII. Protected derivatives of guanosine and adenosine 3'-phosphates. A synthesis of diribonucleoside phosphates starting from adenosine and guanosine derivatives bearing a free NH2 group" COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS, 33(6), 2074-86 CODEN: CCCCAK; ISSN: 0010-0765, 1968, XP009030999 page 2076 -----	1,2,4-7, 9-17, 21-25, 62-70
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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/38638

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BRIDSON, PETER K. ET AL: "Reactions between ribonucleoside derivatives and formaldehyde in ethanol solution" JOURNAL OF THE CHEMICAL SOCIETY, CHEMICAL COMMUNICATIONS , (5), 208-9 CODEN: JCCCAT; ISSN: 0022-4936, 1980, XP009031678 page 209	1,2,4-7, 9-17, 21-25, 62-70
X	BRIDSON, PETER K. ET AL: "A novel method for the methylation of heterocyclic amino groups. Conversion of guanosine into its 2-N-methyl- and 2-N,2-N-dimethyl derivatives" BIOORGANIC CHEMISTRY , 8(3), 339-49 CODEN: BOCMBM; ISSN: 0045-2068, 1979, XP009031001 page 342	1,2,4-7, 9-17, 21-25, 62-70
Y	PATENT ABSTRACTS OF JAPAN vol. 0050, no. 35 (C-046), 5 March 1981 (1981-03-05) & JP 55 160795 A (YAMASA SHOYU CO LTD), 13 December 1980 (1980-12-13) abstract	1-70

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/38638

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

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

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims 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:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.:  
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.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

The initial phase of the search revealed a very large number of documents relevant to the issue of novelty. So many documents were retrieved that it is impossible to determine which parts of the claims may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claims is impossible. Consequently, the search has been restricted to:  
Cordycepin derivatives as mentioned in claims 3, 8, 18-20, 43, and their preparation and use.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/38638

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			JP 57037600	B 10-08-1982
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JP 55160795	A	13-12-1980	JP 1117411	C 15-10-1982
			JP 57010118	B 24-02-1982
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