

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 September 2005 (29.09.2005)

PCT

(10) International Publication Number
WO 2005/089736 A3

(51) International Patent Classification⁷: **A61K 31/4741**,
31/675, A61P 1/00, 1/02, 9/10, 11/06, 11/00, 17/06, 19/02,
19/10, 21/00, 29/00, 37/02

Olga [RU/US]; 1111 E. University Drive, #235, Tempe,
AZ 85281 (US).

(21) International Application Number:
PCT/US2005/007011

(74) Agent: **HARPER, David, S.**; McDonnell Boehnen Hul-
bert & Berghoff LLP, 300 South Wacker Drive, Suite 3100,
Chicago, IL 60606 (US).

(22) International Filing Date: 4 March 2005 (04.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/550,759 5 March 2004 (05.03.2004) US
60/553,189 15 March 2004 (15.03.2004) US
60/587,928 14 July 2004 (14.07.2004) US
60/589,109 19 July 2004 (19.07.2004) US

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): 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, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

(71) Applicants (*for all designated States except US*): **THE
ARIZONA BOARD OF REGENTS, on behalf of,
ARIZONA STATE UNIVERSITY** [US/US]; 699 S. Mill
Avenue, Suite 601, Room 691AA, Tempe, AZ 85281 (US).
SUN HEALTH RESEARCH INSTITUTE [US/US];
10515 West Santa Fe Drive, Sun City, AZ 85372 (US).

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **CHANG, Yung**
[CN/US]; 1449 W. Amenda Lane, Tempe, AZ 85284
(US). **LORTON, Dianne** [US/US]; 3125 N. Sage Circle,
Avondale, AZ 85323 (US). **LUBAHN, Cheri** [US/US];
6767 W. Butler, #165, Glendale, AZ 85302 (US). **PETTIT,
George, R.** [US/US]; 6232 E. Bret Hills Drive, Paradise
Valley, AZ 85253 (US). **WILSON, David** [US/US]; 2602
E. Willetta Street, Phoenix, AZ 85008 (US). **ANANIEVA,**

Published:

— with international search report

(88) Date of publication of the international search report:
8 December 2005

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: METHODS FOR TREATING INFLAMMATORY AND AUTOIMMUNE DISEASES

(57) Abstract: The present invention provides methods for treating inflammatory conditions, rheumatoid diseases, autoimmune con-
ditions, and conditions associated with bone loss, comprising administering to a subject with an inflammatory condition an amount
effective to treat the condition of a compound selected from the group consisting of narcistatin, pancratistatin, pancratistatin-7' phos-
phate and pancratistatin-3',4' cyclic phosphate, or pharmaceutically acceptable salts thereof.



WO 2005/089736 A3

INTERNATIONAL SEARCH REPORT

International Application No
PC/US2005/007011

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K31/4741 A61K31/675 A61P1/00 A61P1/02 A61P9/10
A61P11/06 A61P11/00 A61P17/06 A61P19/02 A61P19/10
A61P21/00 A61P29/00 A61P37/02

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 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, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GABRIELSEN B ET AL: "Antiviral (RNA) activity of selected Amaryllidaceae isoquinoline constituents and synthesis of related substances." JOURNAL OF NATURAL PRODUCTS. NOV 1992, vol. 55, no. 11, November 1992 (1992-11), pages 1569-1581, XP008051961 ISSN: 0163-3864 cited in the application the whole document ----- -/--	1,2

☒ 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
- *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

5 September 2005

Date of mailing of the international search report

09/09/2005

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

A. Jakobs

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/007011

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>OUARZANE-AMARA M ET AL: "In vitro activities of two antimitotic compounds, pancratistatin and 7-deoxynarciclasine, against Encephalitozoon intestinalis, a microsporidium causing infections in humans."</p> <p>ANTIMICROBIAL AGENTS AND CHEMOTHERAPY. DEC 2001, vol. 45, no. 12, December 2001 (2001-12), pages 3409-3415, XP008051955 ISSN: 0066-4804 cited in the application the whole document</p>	1,2
X	<p>US 5 529 989 A (PETTIT ET AL) 25 June 1996 (1996-06-25) abstract column 1, line 35 - column 2, line 2</p>	1,2
A	<p>US 4 985 436 A (PETTIT ET AL) 15 January 1991 (1991-01-15) the whole document</p>	1-20
A	<p>WO 00/48606 A1 (OXIGENE, INC., USA) 24 August 2000 (2000-08-24) abstract; claim 15 page 4, line 1 - page 5, line 4</p>	1-20
A	<p>PETTIT G R ET AL: "Antineoplastic agents 500. Narcistatin" JOURNAL OF NATURAL PRODUCTS, vol. 66, no. 1, 2003, pages 92-96, XP002978936 ISSN: 0163-3864 the whole document</p>	1-20
A	<p>SIDWELL R W ET AL: "ANTIVIRAL AND IMMUNOMODULATING INHIBITORS OF EXPERIMENTALLY- INDUCED PUNTO TORO VIRUS INFECTIONS" ANTIVIRAL RESEARCH, ELSEVIER SCIENCE BV., AMSTERDAM, NL, vol. 25, no. 2, 1994, pages 105-122, XP000600991 ISSN: 0166-3542 abstract tables 5,7</p>	1-20

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/007011

Box II Observations where certain claims were found unsearchable (Continuation of item 2 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:

Although claims 1-20 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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:
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 III Observations where unity of invention is lacking (Continuation of item 3 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.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/007011

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5529989	A	25-06-1996	NONE	
US 4985436	A	15-01-1991	AT 78481 T AU 571948 B2 AU 3997885 A CA 1297108 C DE 3586381 D1 DE 3586381 T2 EP 0175709 A1 IT 1221760 B JP 6099436 B JP 61501986 T KR 9004003 B1 NO 854112 A US 4866071 A WO 8503708 A1	15-08-1992 28-04-1988 10-09-1985 10-03-1992 27-08-1992 21-01-1993 02-04-1986 12-07-1990 07-12-1994 11-09-1986 07-06-1990 16-10-1985 12-09-1989 29-08-1985
WO 0048606	A1	24-08-2000	AU 776511 B2 AU 3597300 A CA 2358925 A1 CA 2455956 A1 EP 1152764 A1 EP 1547603 A2 JP 2002537262 T US 2003109500 A1 US 6538038 B1	09-09-2004 04-09-2000 24-08-2000 24-08-2000 14-11-2001 29-06-2005 05-11-2002 12-06-2003 25-03-2003