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Published:
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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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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: NON-PEPTIDIC MOLECULES FOR DETECTING AND TREATING TUMORS

(57) Abstract: One of the most universal characteristics of malignant tumors is their acidity. Onco-tools are small non-peptide synthetic molecules designed to exploit this acidity for early detection and destruction of tumors. Each onco-tool has a structure which is anionic and hydrophilic at pH 7.4 and so repels from the negatively-charged surfaces of cells in normal tissues. When an onco-tool enters an acidic environment, such as in a tumor, a portion of the onco-tool molecules switch to their non-ionic lipophilic form which is designed to enter cells, such as cells in acidic areas of tumors. Prior to use of an onco-tool, a selected radioisotope is linked to the onco-tool. If that radioisotope emits radiation which can be detected outside the body, then the onco-tool can serve for detecting tumors. If that radioisotope emits radiation effective to kill cells, then the onco-tool can serve for treating tumors.

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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K31/16 A61K31/185 A61P35/00 A61P43/00

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)
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, MEDLINE, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 2006/193775 A1 (SUMMERTON JAMES E [US]) 31 August 2006 (2006-08-31) abstract FIgure 16c claims 1-22	1-5,7-10
X	WO 2004/089415 A (NOVO NORDISK AS [DK]; KAMPEN GITA CAMILLA TEJLGAARD [DK]; ANDERSEN HEN) 21 October 2004 (2004-10-21) abstract page 1, line 7 - line 11 page 161, line 19 - line 20 page 173, line 28 - page 174, line 13 claims 1-55	1-5,7-10

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family 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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 October 2007	10/10/2007

Name and mailing address of the ISA/	Authorized officer
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	Taylor, Mark

INTERNATIONAL SEARCH REPORT

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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	US 2003/083505 A1 (JACKSON PAUL F [US] ET AL) 1 May 2003 (2003-05-01) abstract Table II, compounds (14) and (16) claims 1-41	1-5,7-12
X	US 2004/167128 A1 (COMESS KENNETH M [US] ET AL) 26 August 2004 (2004-08-26) abstract claims 1-21	1-5,7-10
X	TAYLOR G M ET AL: "On The Ritter Reaction of Cyclic Hydroxyamines: Synthesis of Conformationally-Restricted Reduced Amide Dipeptide Isosteres" TETRAHEDRON LETTERS, ELSEVIER, AMSTERDAM, NL, vol. 37, no. 8, 19 February 1996 (1996-02-19), pages 1297-1300, XP004030131 ISSN: 0040-4039 the whole document Scheme I, Compound (20)	1-5,7-12
A	EP 0 952 148 A1 (PFIZER PROD INC [US]) 27 October 1999 (1999-10-27) abstract claims 1-12	1-5,7-10

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 21-26 and 31-35 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.

Although claims 19-20 and 27-35 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box II.1

Claims Nos.: 6,11-35

Rule 39.1(i) PCT - Scientific theory

Continuation of Box II.2

Claims Nos.: 11-35

The present claims relate to an extremely large number of possible compounds/ products/ methods. Support and disclosure in the sense of Article 6 and 5 PCT is, however, lacking for any of the claimed medical or diagnostic uses. Indeed, the descriptoin provides only an indication of theoretical and physicochemical studies on a loose group of organic molecules in which internal hydrogen bonding occurs. There is not one single example, either in vitro or in vivo, of how these compounds might be used in medical or diagnostic methods. Indeed, there is not even one example of the best mode for carrying out the claimed invention (Rule 5.1(v) PCT).

As such, the application must be viewed as representing a scientific theory, which is yet to be proven by way of real examples. This is borne out by Examples 8 and 9, which give apparent guidance in only general terms and with reference to standard procedures on how in vitro and in vivo tests might be performed. These examples are not so worded as to indicate that the experiments have even been carried out, contain no data pertaining to experiments which might have been carried out, nor any indication of which compositions may or may not have been tested. The application, in as far as it relates to medical and diagnostic methods, therefore cannot be searched in view of Rule 39.1(i) PCT.

The search was thus restricted to those claimed compounds of claims 1-10.

The search of claims 1-10 was further restricted in view of the following clarity objections:

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

(a) Claims 1 and 10 seek protection for "an aliphatic ring structure" which may contain an H-bond acceptor which is "part of the aliphatoic ring structure". Aliphatic ring structure contain only carbon atoms. However, since carbon cannot readily form hydrogen bonds, and it is indeed heteroatoms such as N and O which are notmally iinvolved in hydrogen bonding, this definition must include ring compounds containing heteroatoms such as N and O. They are therefore not aliphatic but heterocyclic. The search has therefore been performed ignoring the expression "aliphatic".

(b) Claims 4-6 are unclear in view of the following expressions because they have no generally-accepted and well-defined meanings:

"pH-Switch component" (claim 4);
"pH-mediated transition" (claim 4);
"higher pH" (claim 4);
"lower pH" (claim 4);
"effective to report the presence of the composition" (claim 5);
"a specificity factor" (claim 6).

Regarding the expression "ph-Switch", this expression furthermore does not allow the skilled man to readily determine whether any given composition falls within the general structural definitions given in the claims without recourse to undue experimentation.

In the case of claims 4 and 5, these expressions have been ignored. Since this is its only characterising feature, claim 6 has not been searched.

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.

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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. [X] Claims Nos.: 6,11-35
because they relate to subject matter not required to be searched by this Authority, namely:

see FURTHER INFORMATION sheet PCT/ISA/210

2. [X] Claims Nos.: 11-35
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 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

Information on patent family members

International application No
PCT/US2007/008215

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006193775 A1	31-08-2006	NONE	
WO 2004089415 A	21-10-2004	EP 1615667 A2	18-01-2006
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EP 0952148 A1	27-10-1999	AT 266634 T	15-05-2004
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		DE 69917124 T2	12-05-2005
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