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C12N 5/09 (2010.01) *G01N 33/574* (2006.01)
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(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

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(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

(88) Date of publication of the international search report:

21 March 2013

(54) Title: ANIMAL MODEL OF HUMAN CANCER AND METHODS OF USE

(57) Abstract: The subject invention pertains to a non-human animal model of human cancer, methods of producing a non-human animal model of human cancer, methods of using a non-human animal model to propagate human cancer cells, methods of using a non-human animal model to study cancer, methods of using a non-human animal model to screen potential treatments for a subject's cancer, methods of using a non-human animal model for treating cancer in a subject (providing personalized therapy), methods of using a non-human animal model for identifying a biomarker of cancer treatment; and methods of using a non-human animal model for selecting cancer patients for a clinical trial.



WO 2012/145535 A3

A. CLASSIFICATION OF SUBJECT MATTER

A01K 67/027(2006.01)i, C12N 5/09(2010.01)i, C12Q 1/04(2006.01)i, G01N 33/15(2006.01)i, G01N 33/574(2006.01)i, A61P 35/00(2006.01)i

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)

A01K 67/027; A61K 49/00; C12N 5/00; C12N 5/10; A61K 35/00; G01N 33/567; G01N 33/574

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: non-human animal, primary human cancer cell, liver, implant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Daniela Mischek et al., `Molecularly Characterised Xenograft Tumour Mouse Models: Valuable Tools for Evaluation of New Therapeutic Strategies for Secondary Liver Cancers`, Journal of Biomedicine and Biotechnology, Vol. 2009, Article ID 437284, pp. 1-13 (2009). See abstract, materials and methods.	1-18
A	US 2009-0325202 A1 (SONER ALTIOK) 31 December 2009. See abstract, paragraphs 129, 142, claims 1, 6, 8.	1-18
A	US 2002-0133833 A1 (CHARLES L. SAWYERS et al.) 19 September 2002. See abstract, paragraphs 12, 71-74, claims 1, 9, 11-12, 17.	1-18
A	US 05569812 A (ANN MONOSOV et al.) 29 October 1996. See abstract, column 3, lines 1-4, 16-18, column 4, line 66-column 5, line 29, column 7, lines 46-65, claims 1-6, 8-9, 11-12.	1-18
A	US 05986170 A (ELIZABETH REPASKY SUBJECK) 16 November 1999. See abstract, column 1, lines 43-49, 60-65, column 3, line 49-column 4, line 1, column 6, line 63-column 7, line 26, claims 1, 5-6.	1-18



Further documents are listed in the continuation of Box C.



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 application or patent 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 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

21 DECEMBER 2012 (21.12.2012)

Date of mailing of the international search report

26 DECEMBER 2012 (26.12.2012)

Name and mailing address of the ISA/KR



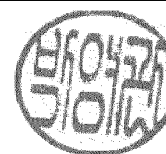
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/034290

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0283453 A1 (JUAN CARLOS RODRIGUEZ) 06 December 2007. See abstract, paragraphs 16-20, 23-25, 49-53, 55, 92-95, 98, claims 1, 3, 5, 19, 22, 26, 30.	1-18

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/034290**Box No. 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:
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 No. 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:

Claims 1-18 (Group 1), Claims 19-35 (Group 2), Claims 36-45 (Group 3), Claim 47 (Group 4), Claims 48 and 49 (Group 5), Claims 50 and 51 (Group 6), Claims 52 and 53 (Group 7).

The only common technical features between Groups 1-7 are an animal model comprising a non-human animal having one or more human primary cancer cells implanted in or on the liver of animal. However, these features lack novelty and/or inventive step, considering a document of Journal of Biomedicine and Biotechnology, Vol. 2009, Article ID 437284, pp. 1-13 (2009) cited in this ISR.

Thus, there is no technical relationship left over the prior art among the claimed inventions over the prior art, leaving the claims without a single general inventive concept. Hence there is lack of unity "a posteriori" (PCT Rules 13.1 and 13.2).

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.:
1-18

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/034290

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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member(s)Publication
date

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25.02.2009

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17.04.2008