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(54) Title: SPECIFIC APTAMERS GENERATED FOR SUPPRESSION OF CELL MIGRATION AND INVASION BY CANCER CELLS, METHODS OF SELECTION FOR SUCH APTAMERS AND THEIR USAGE

(57) Abstract: The invention relates to a new method to generate aptamers selected using live metastatic cancer cell lines. The inventors have shown that using their modified SELEX system it is possible to generate metastatic cell specific aptamer molecules and that some of the aptamer molecules they have developed prevent metastatic cell migration.



WO 2009/090554 A3

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N15/11 C12Q1/68

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)

C12N C12Q

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, BIOSIS, WPI Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 564 290 A (GILEAD SCIENCES INC [US]; SCHERING AG [DE]) 17 August 2005 (2005-08-17) paragraph [0003] - paragraph [0019] paragraph [0031] - paragraph [0056] -----	1-17, 19-23, 25,26, 31-37
X	WO 2005/093097 A (COMMISSARIAT ENERGIE ATOMIQUE [FR]; TAVITIAN BERTRAND [FR]; DUCONGE FR) 6 October 2005 (2005-10-06) cited in the application the whole document ----- -/--	1-17, 19-23, 25,26, 31-37



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 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

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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	MORRIS KEVIN N ET AL: "High affinity ligands from in vitro selection: Complex targets" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, DC, vol. 95, no. 6, 17 March 1998 (1998-03-17), pages 2902-2907, XP002207684 ISSN: 0027-8424 cited in the application the whole document	1-17, 19-23, 25,26, 31-37
X	WANG CHENGLONG ET AL: "Single-stranded DNA aptamers that bind differentiated but not parental cells: Subtractive systematic evolution of ligands by exponential enrichment." JOURNAL OF BIOTECHNOLOGY, vol. 102, no. 1, 10 April 2003 (2003-04-10), pages 15-22, XP002484057 ISSN: 0168-1656 cited in the application the whole document	1-17, 19-23, 25,26, 31-37
A	TATOSYAN A ET AL: "Two novel variants of the v-src oncogene isolated from low and high metastatic RSV-transformed hamster cells." VIROLOGY 15 FEB 1996, vol. 216, no. 2, 15 February 1996 (1996-02-15), pages 347-356, XP002484058 ISSN: 0042-6822 cited in the application abstract	1-37
A	MI ET AL: "Targeted inhibition of alphavbeta3 integrin with an RNA aptamer impairs endothelial cell growth and survival" BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, ACADEMIC PRESS INC. ORLANDO, FL, US, vol. 338, no. 2, 16 December 2005 (2005-12-16), pages 956-963, XP005153006 ISSN: 0006-291X abstract	1-37

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2009/000276

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:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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.:

see additional sheet(s)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: Claims: 1-17 (in full), 18-37 (in part)

A method for identifying aptamers specific for a metastatic cancer cell marker; an aptamer identified by said method, in particular comprising primer recognition sites defined by SEQ ID Nos 1 and 2; an aptamer defined by SEQ ID No 3 or 4; products comprising one of said aptamers; uses of said aptamer; methods involving said aptamer.

Inventions 2-16. Claims 18-37 (in part)

An aptamer defined by one of SEQ ID Nos 5, 6, 10-12, 14, 15, 17, 18, 23, 24, 33-36 respectively; products comprising said aptamer; uses of said aptamer; methods involving said aptamer.

Invention 17. Claims 18-37 (in part)

An aptamer defined by one of SEQ ID Nos 7-9, 19-22; products comprising said aptamer; uses of said aptamer; methods involving said aptamer.

Invention 18. Claims 18-37 (in part)

An aptamer defined by one of SEQ ID Nos 13, 16, 30-32; products comprising said aptamer; uses of said aptamer; methods involving said aptamer

Invention 19. Claims 18-37 (in part)

An aptamer defined by one of SEQ ID Nos 25, 27-29; products comprising said aptamer; uses of said aptamer; methods involving said aptamer.

Invention 20. Claims 18-37 (in part)

An aptamer defined by one of SEQ ID Nos 26, 37; products comprising said aptamer; uses of said aptamer; methods involving said aptamer.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2009/000276

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1564290	A	17-08-2005	AT 401424 T	15-08-2008
			AT 276266 T	15-10-2004
			AU 727460 B2	14-12-2000
			AU 5720096 A	21-11-1996
			CA 2219106 A1	07-11-1996
			CA 2641149 A1	07-11-1996
			DE 69633386 D1	21-10-2004
			DE 69633386 T2	22-09-2005
			DK 1564290 T3	17-11-2008
			EP 2000534 A2	10-12-2008
			EP 0824540 A1	25-02-1998
			ES 2310695 T3	16-01-2009
			JP 11504812 T	11-05-1999
			WO 9634874 A1	07-11-1996
WO 2005093097	A	06-10-2005	CA 2559871 A1	06-10-2005
			EP 1756305 A1	28-02-2007
			FR 2867784 A1	23-09-2005
			JP 2007529213 T	25-10-2007
			US 2008227735 A1	18-09-2008