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(54) Title: MICROFLUIDIC ISOLATION OF TUMOR CELLS OR OTHER RARE CELLS FROM WHOLE BLOOD OR OTHER LIQUIDS

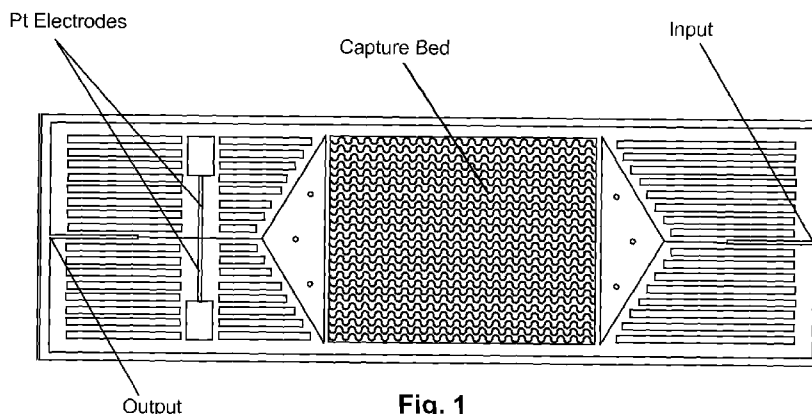


Fig. 1

(57) Abstract: Microdevices are disclosed to efficiently, accurately, and rapidly isolate and enumerate rare cells, such as circulating tumor cells, from liquids such as whole blood. The system employs multiple parallel meandering channels having a width on the order of 1 - 2 cell diameters. The microdevices can be produced at low-cost, may readily be automated, and in many instances may be used without pre-processing of the sample. They may be used to isolate and enumerate rare cells, including for example the detection and diagnosis of cancers, cancer staging, or evaluating the effectiveness of a therapeutic intervention, or detecting pathogenic bacteria. The device may optionally be used to nondestructively capture and later to release target cells.

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A. CLASSIFICATION OF SUBJECT MATTER*C12M 3/00(2006.01)i, G01N 33/574(2006.01)i, A61P 35/00(2006.01)i, C12N 7/00(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)

C12M 3/00; B01J 19/00; B01L 3/00; B32B 9/04; C12N 5/08; G01N 21/59; G01N 27/26

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 since 1975.
Japanese utility models and applications for utility models since 1975.

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

eKOMPASS(KIPO internal) & Keywords: microdevice, microfluidic, channel, width, covalent, membrane, selective, bind, meander, cell, capture and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006-108087 A2 (CELLPOINT DIAGNOSTICS et al.) 12 October 2006 See Abstract; Claims 1-25, 37, 38, 40, 44-54, 80; Figures 30, 32, 49, 50, 57 A, 69A, 69B, 69G.	1-19
A	WO 2006-113727 A2 (PRESIDENT AND FELLOWS OF HARVARD COLLEGE) 26 October 2006 See Abstract; Claims 1-59; Figures 1, 2, 7, 10.	1-19
A	EP 1447134 A1 (AGILENT TECHNOLOGIES, INC.) 18 August 2004 See Abstract; Figures 2, 3; Claims 1-9.	1-19
A	US 2003-0091476 A1 (ZHOU, X. et al.) 15 May 2003 See Abstract; Figures 5C, 5H	1-19
A	US 2006-0207877 A1 (SCHMIDT, W. et al.) 21 September 2006 See Abstract; Claims 1, 17, 23, 33, 35.	1-19

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"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

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/043697

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of :

a. type of material

- a sequence listing
- table(s) related to the sequence listing

b. format of material

- on paper
- in electronic form

c. time of filing/furnishing

- contained in the international application as filed
- filed together with the international application in electronic form
- furnished subsequently to this Authority for the purposes of search

2. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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